

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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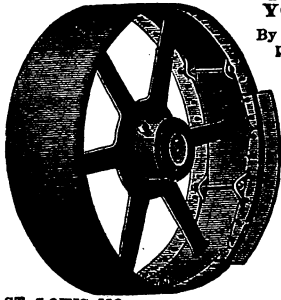
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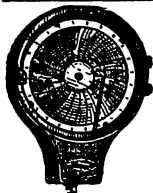


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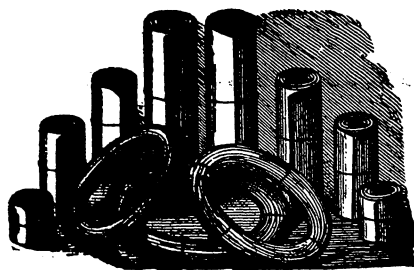
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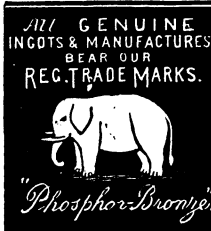
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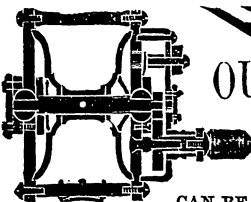
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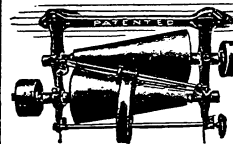
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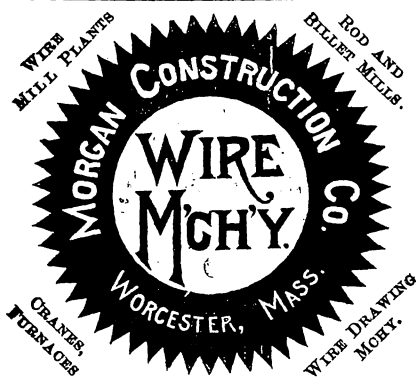
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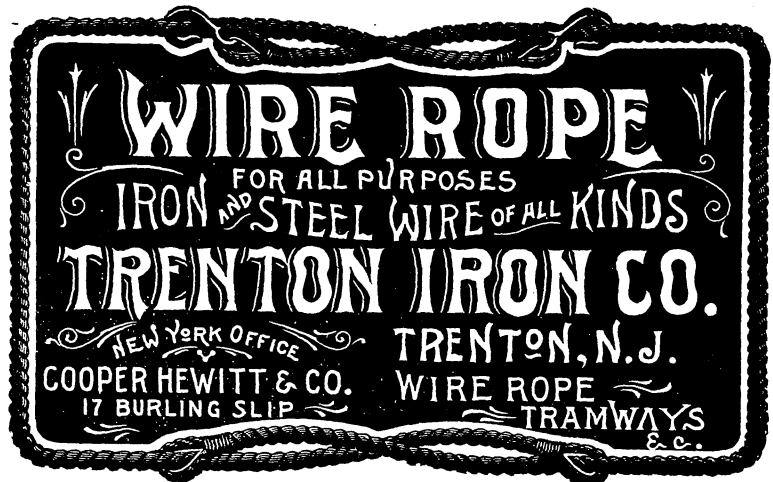
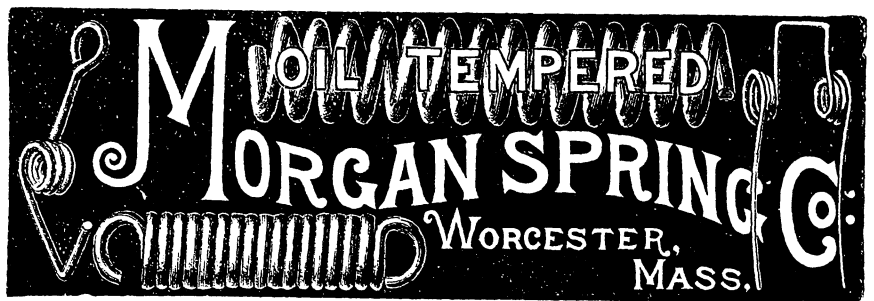
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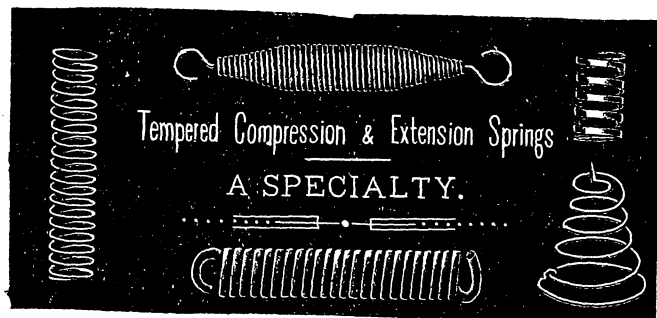


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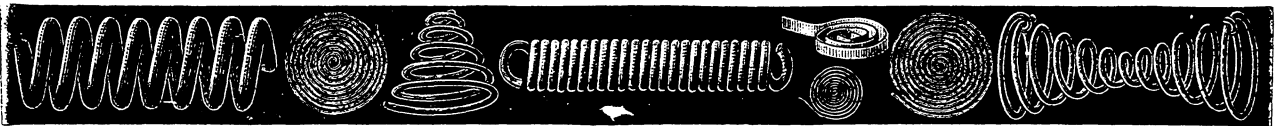
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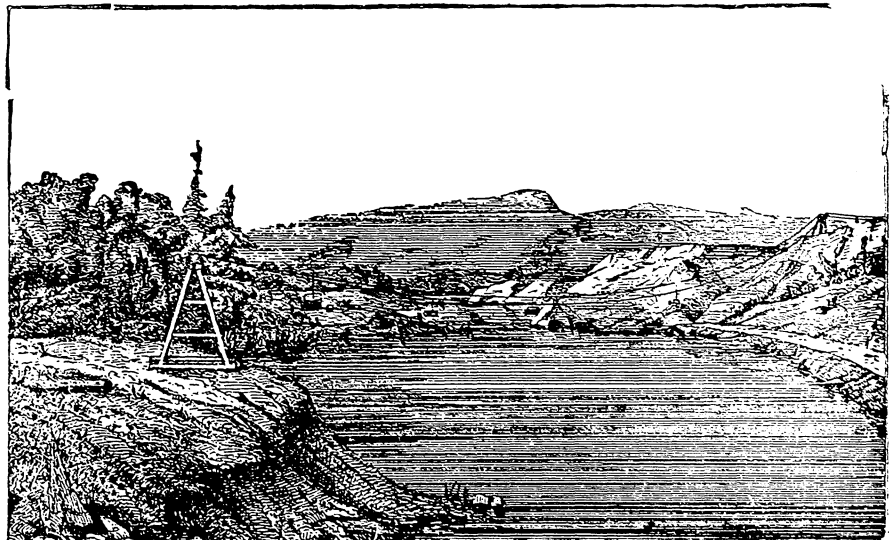
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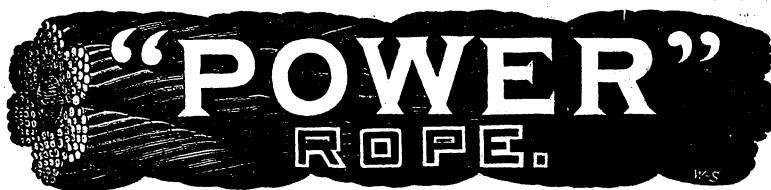
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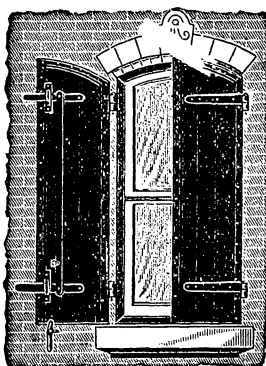
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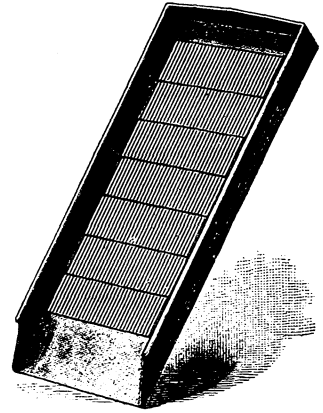
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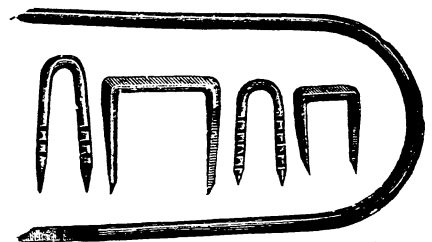
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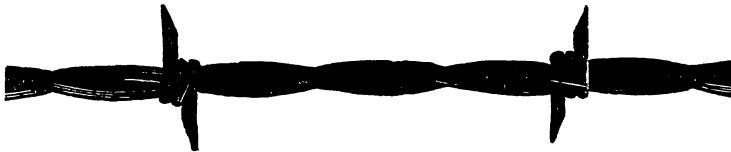
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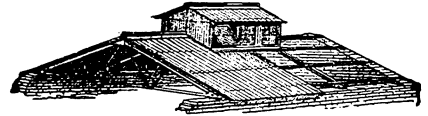
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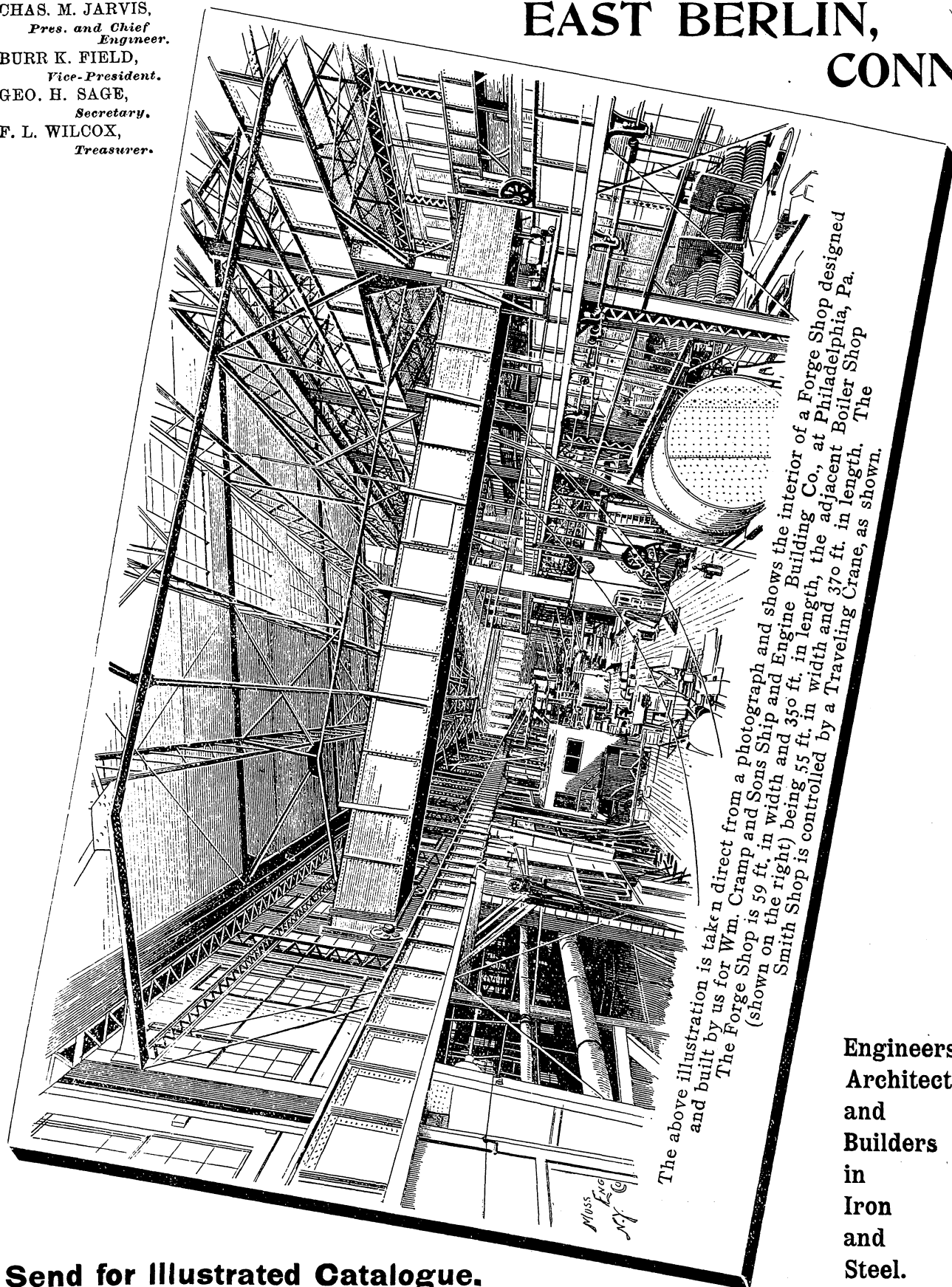
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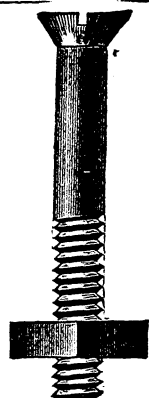
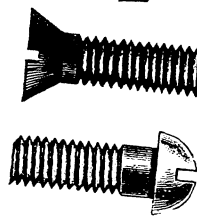
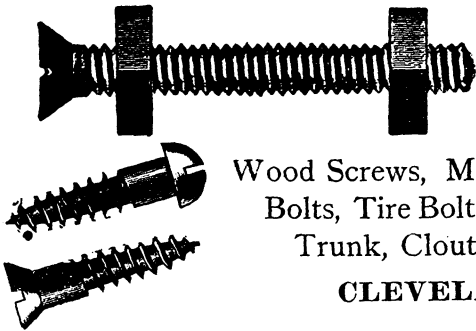
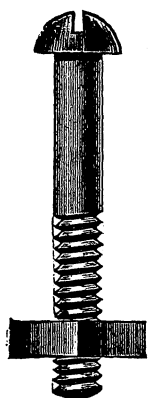
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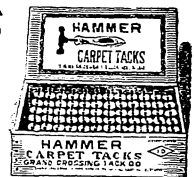
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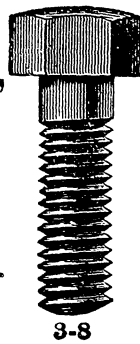
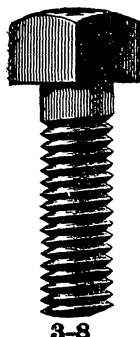
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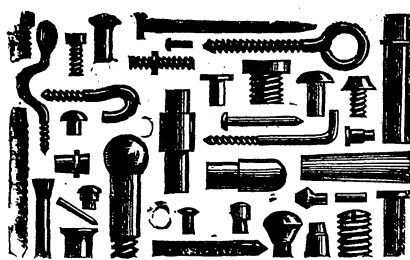
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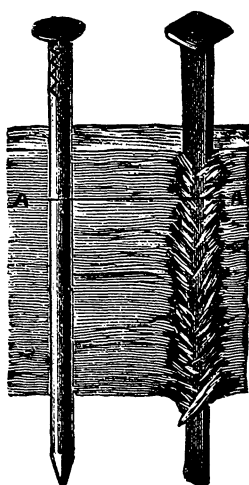
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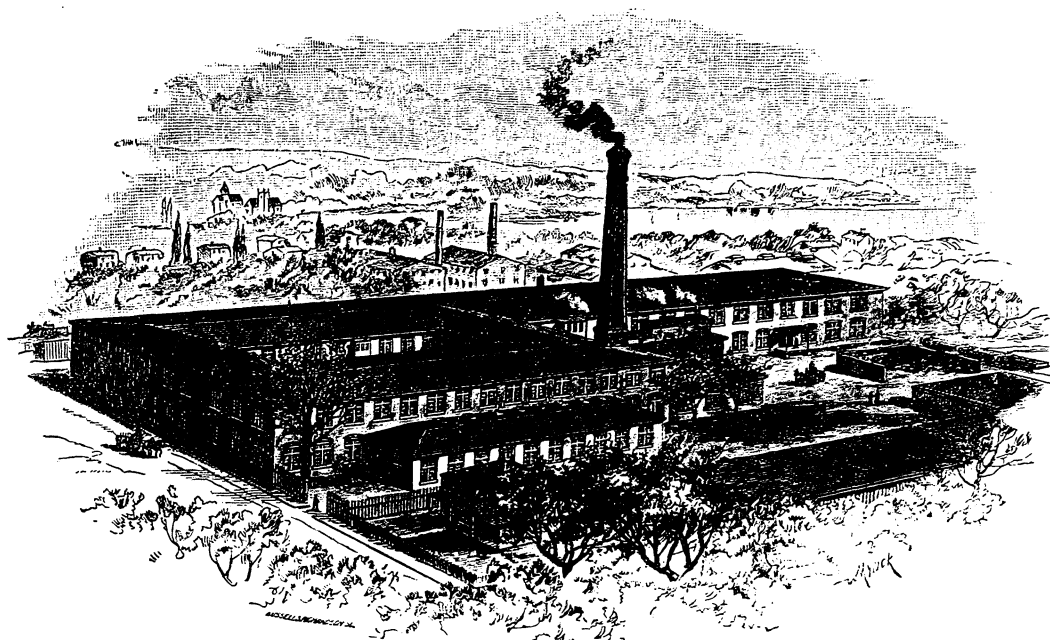
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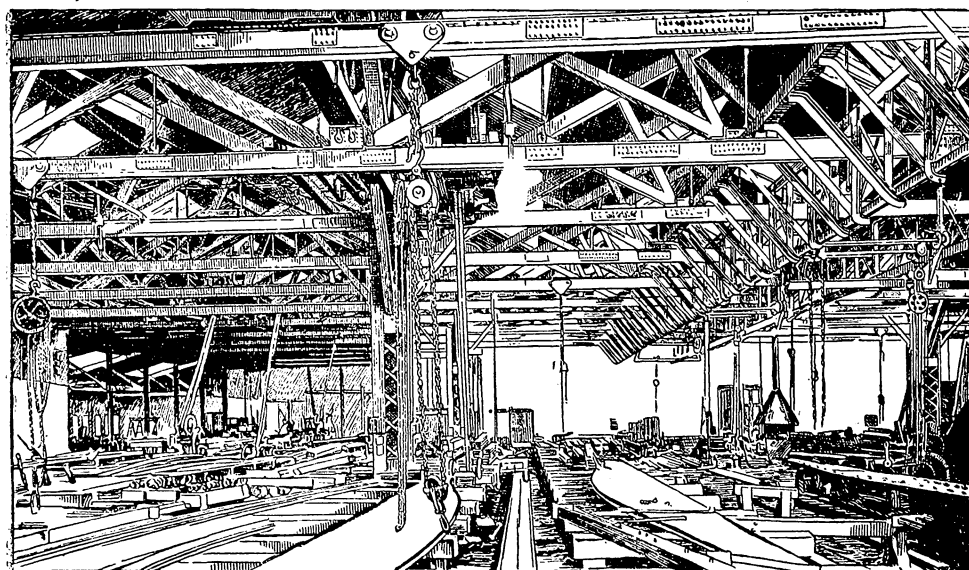
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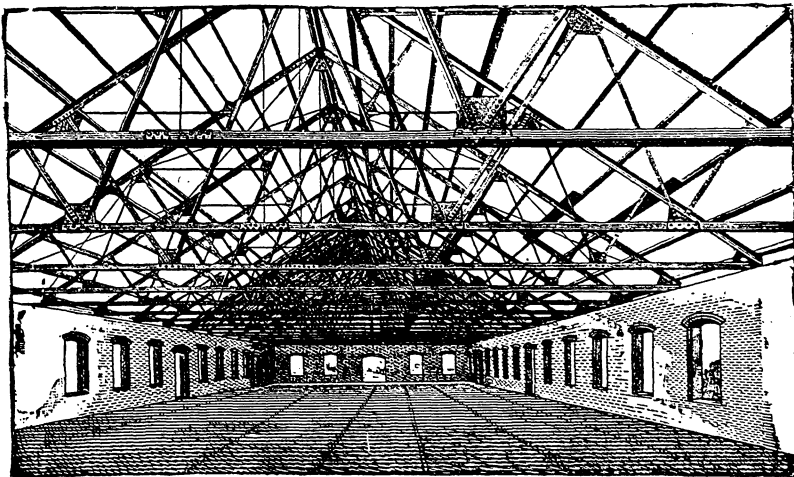
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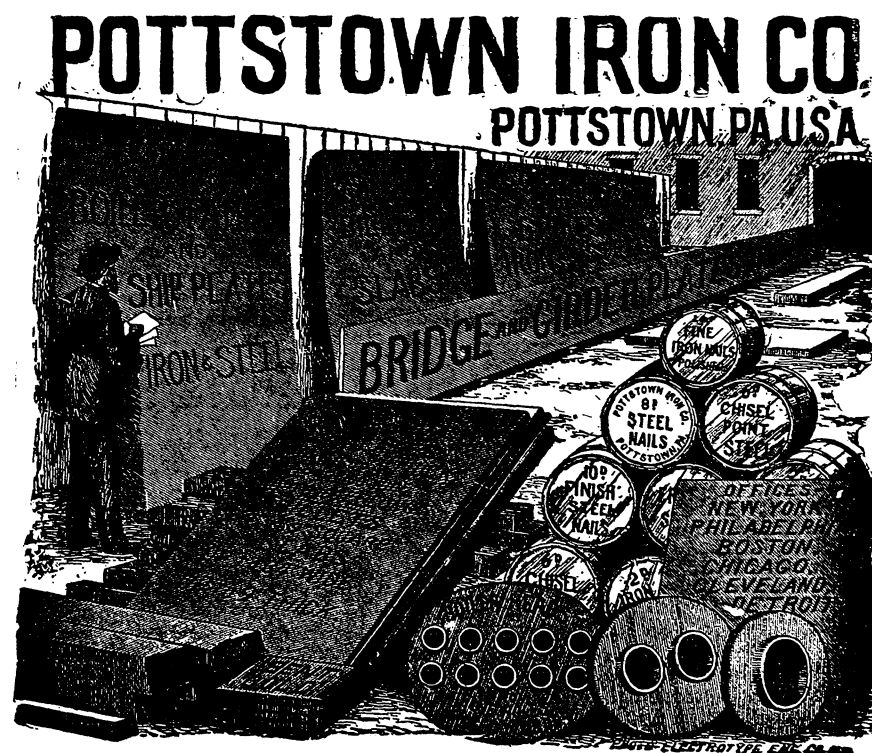
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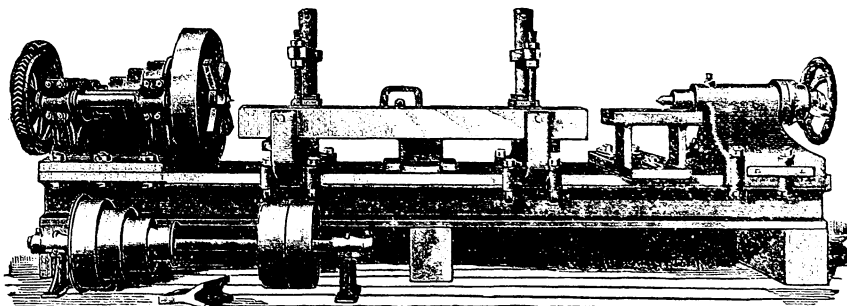
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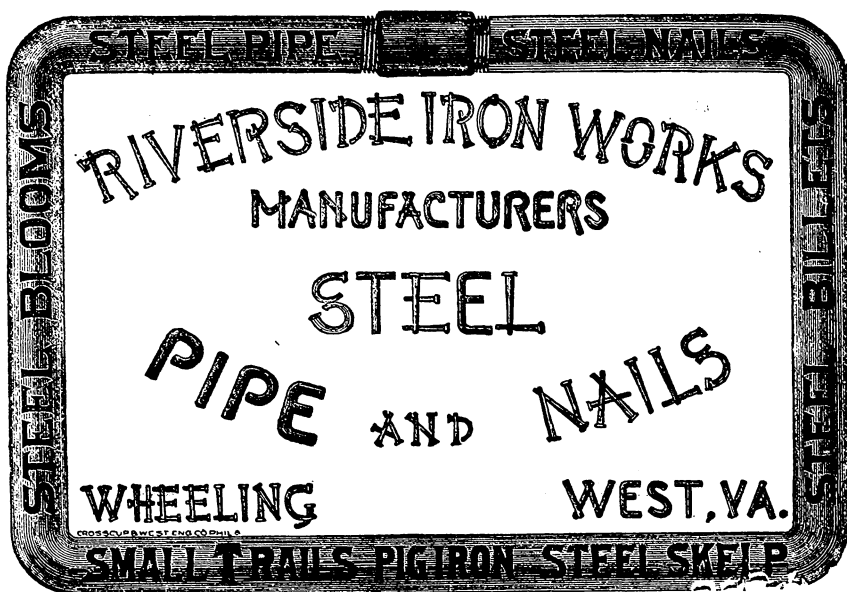
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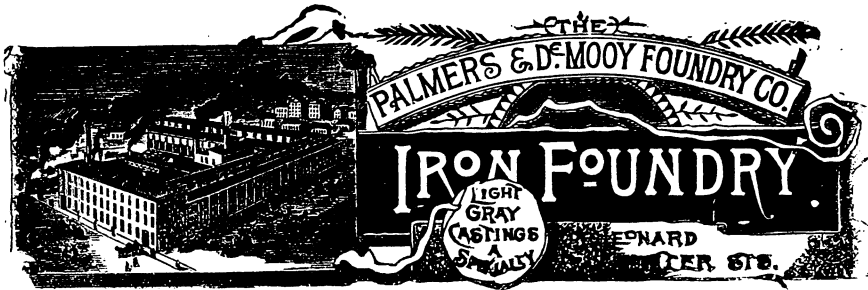
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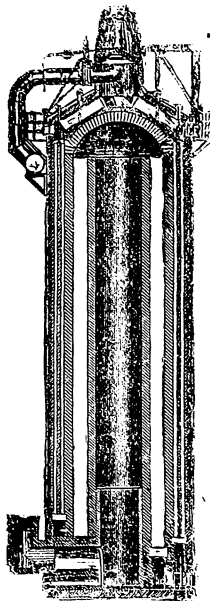
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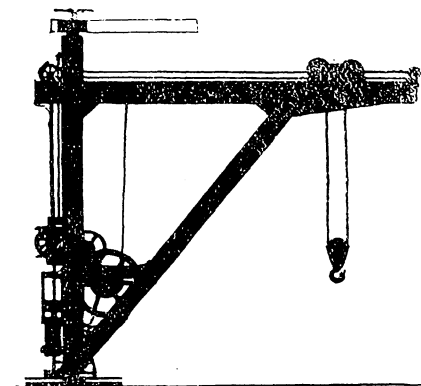
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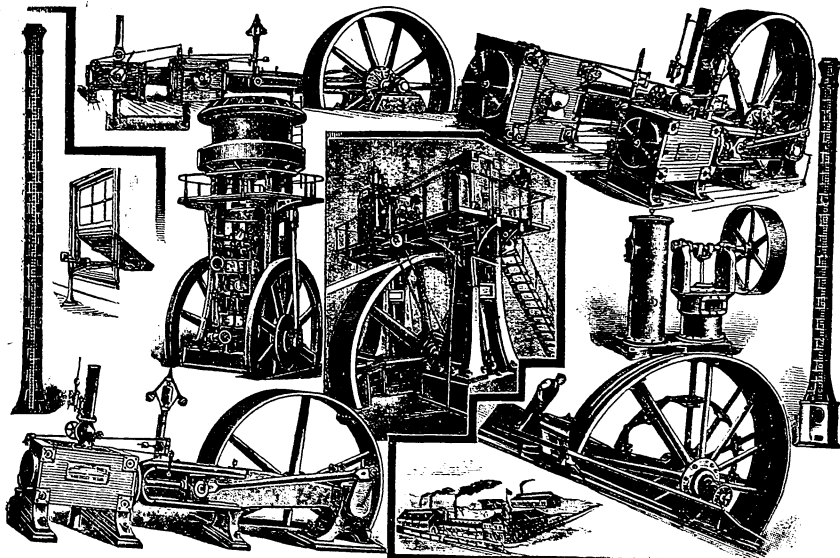
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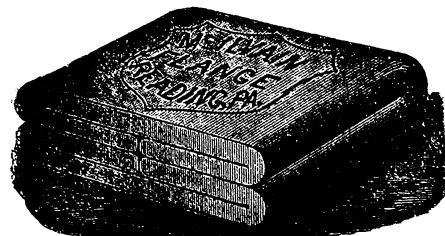
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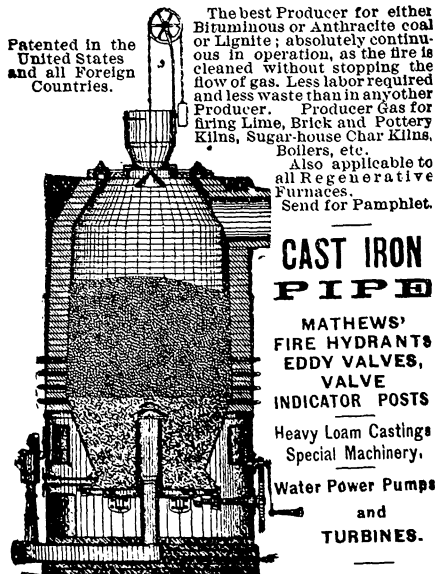
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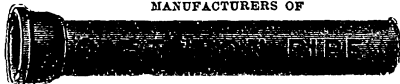
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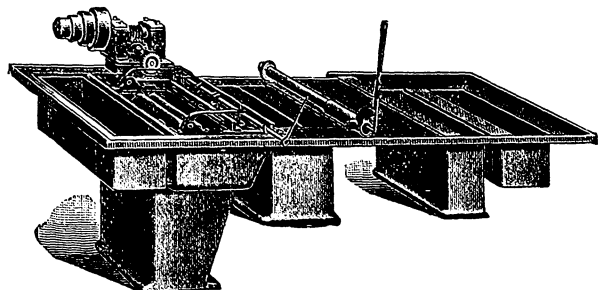
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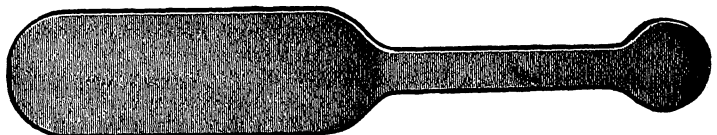
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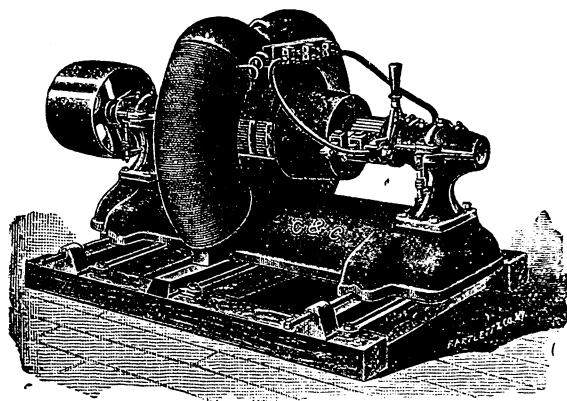
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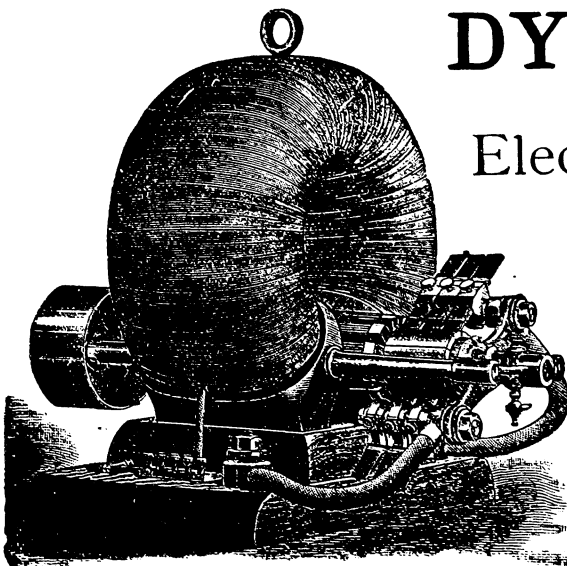
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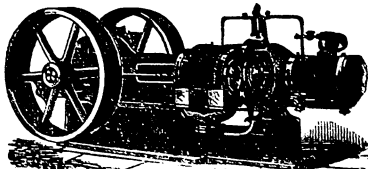
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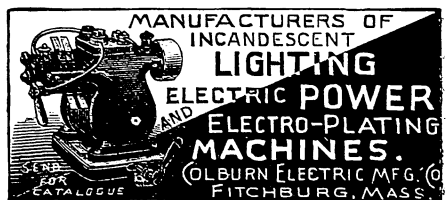
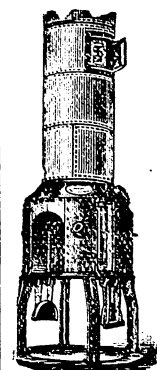
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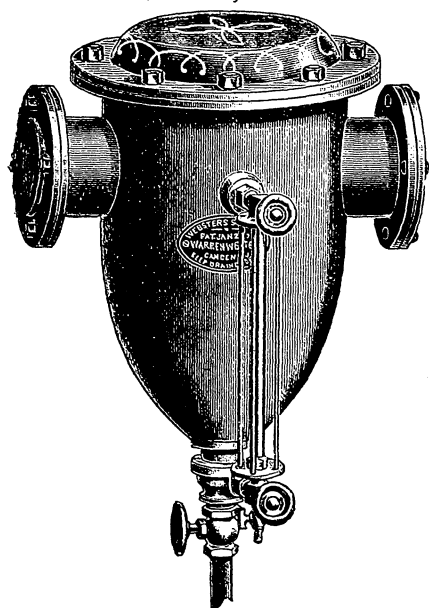
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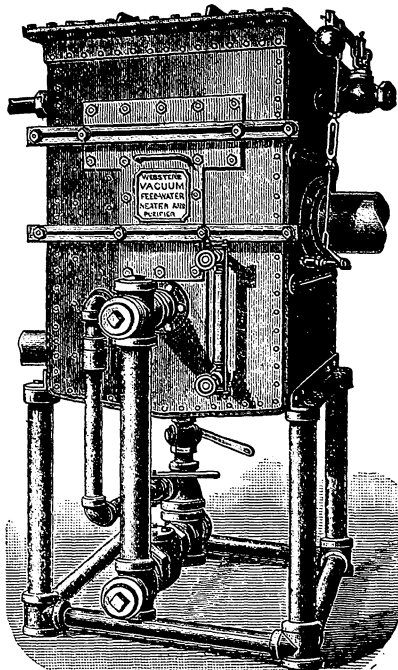
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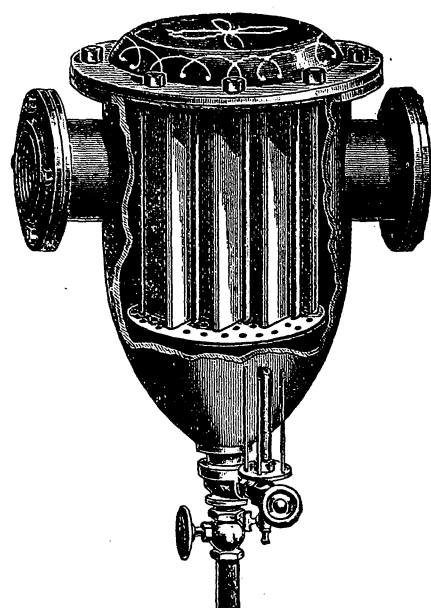
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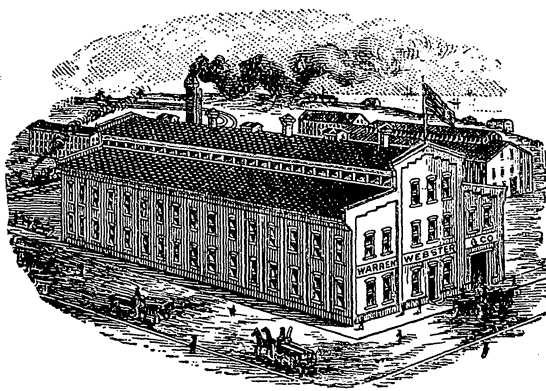
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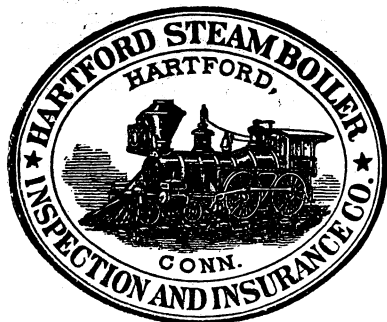
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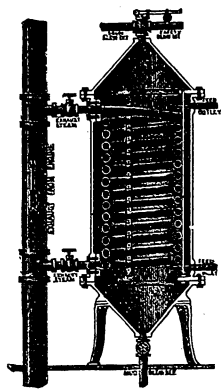
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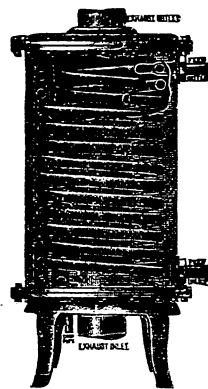
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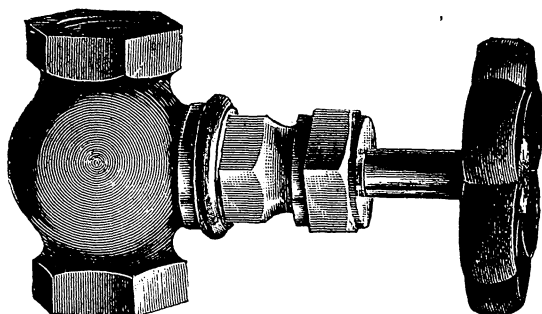
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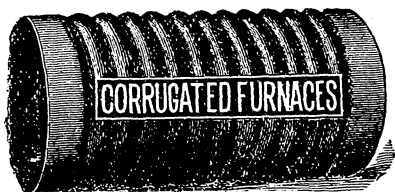
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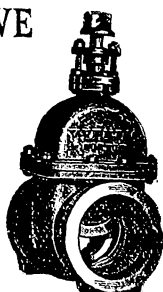
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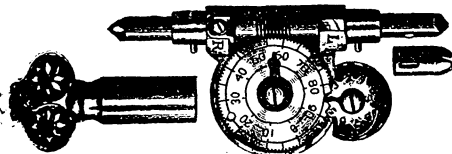
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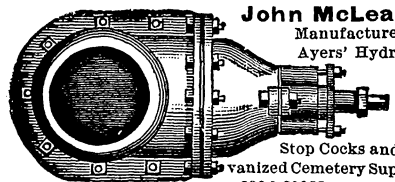
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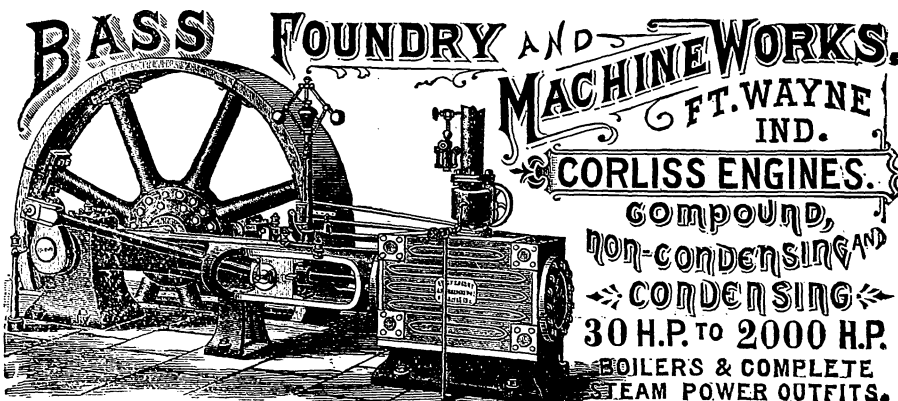
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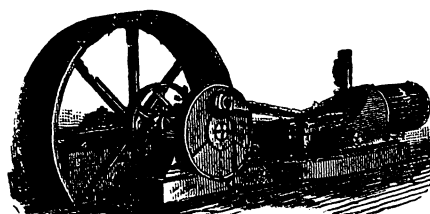


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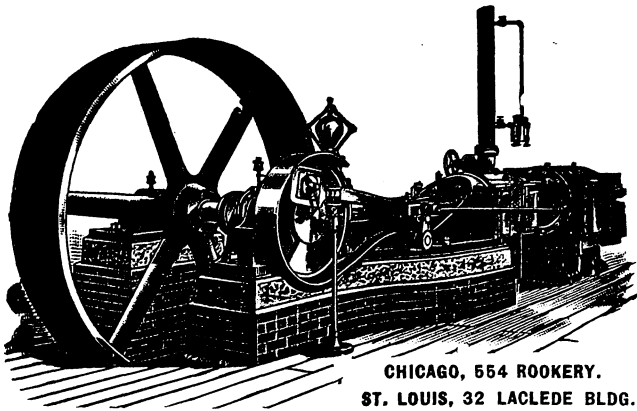
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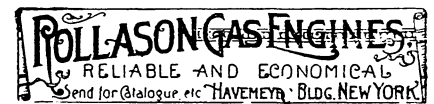
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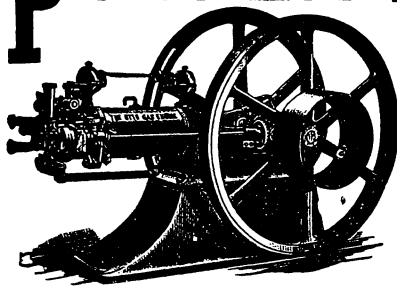
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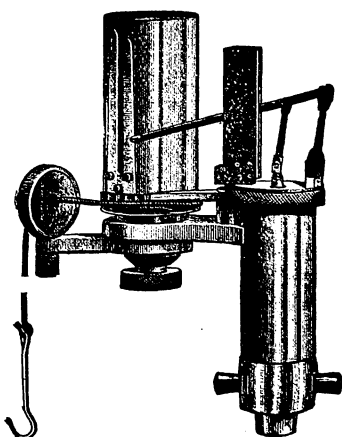
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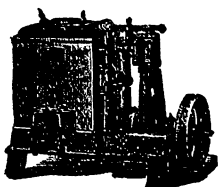
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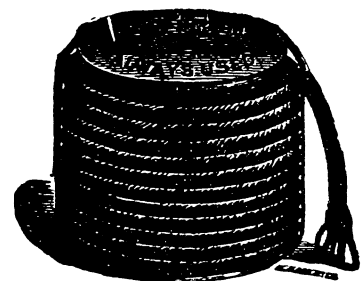
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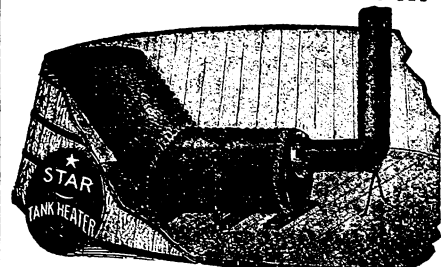
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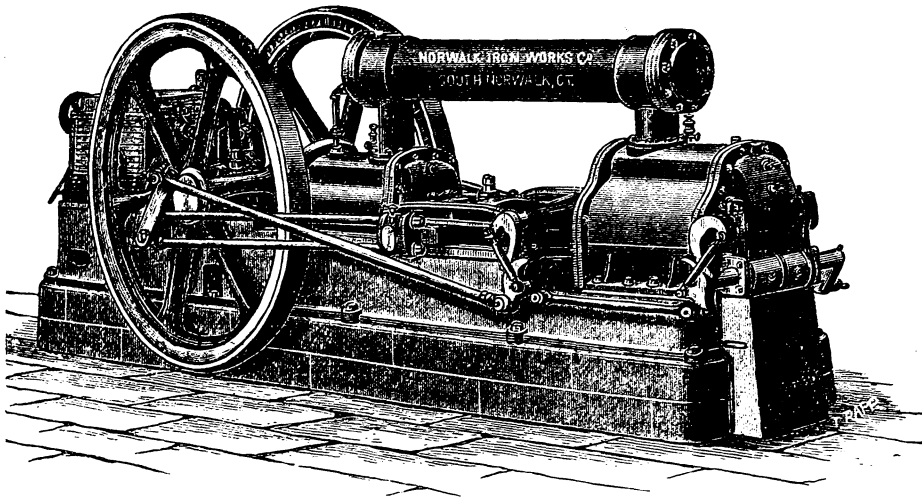
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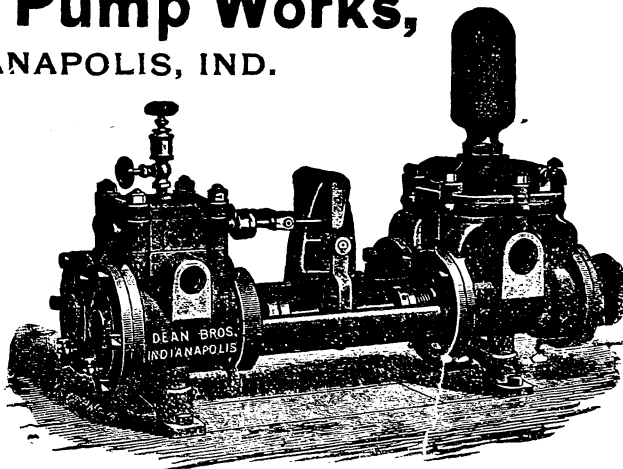
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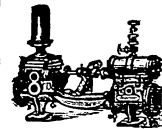
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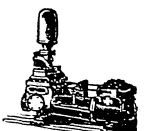
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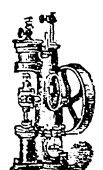
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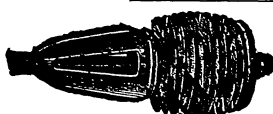
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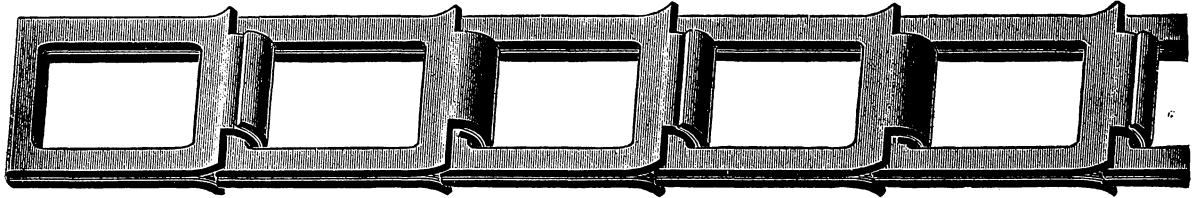
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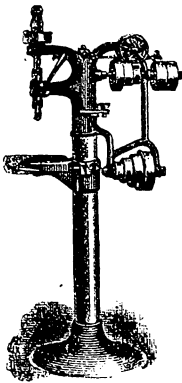
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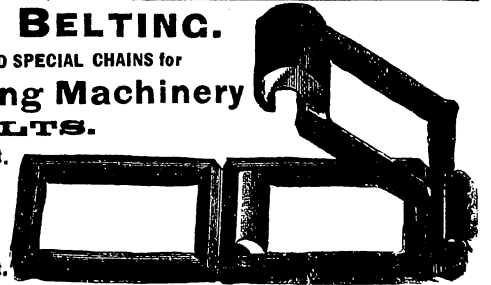
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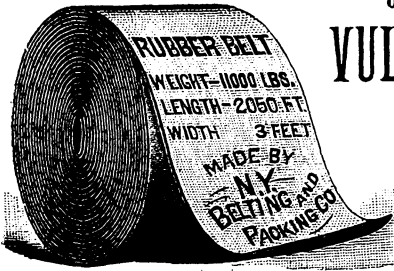
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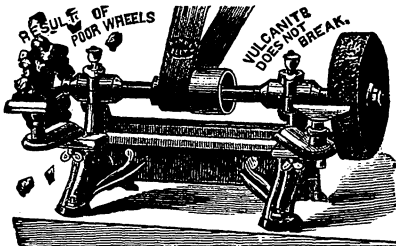
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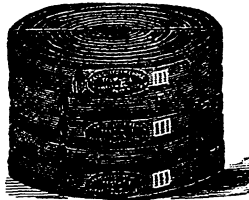
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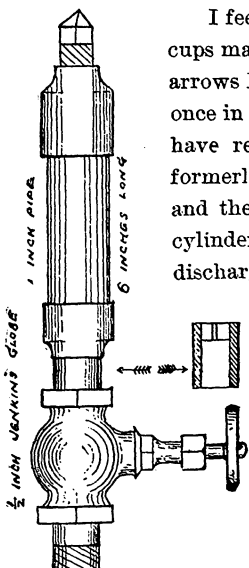


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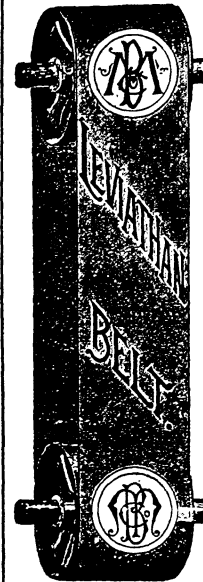
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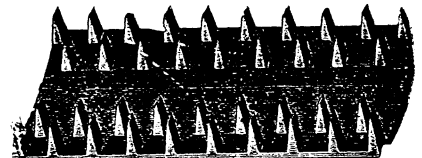
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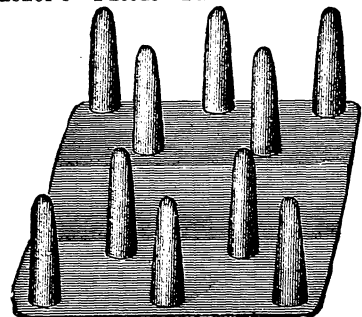
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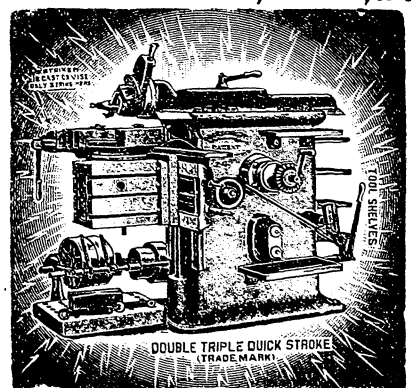
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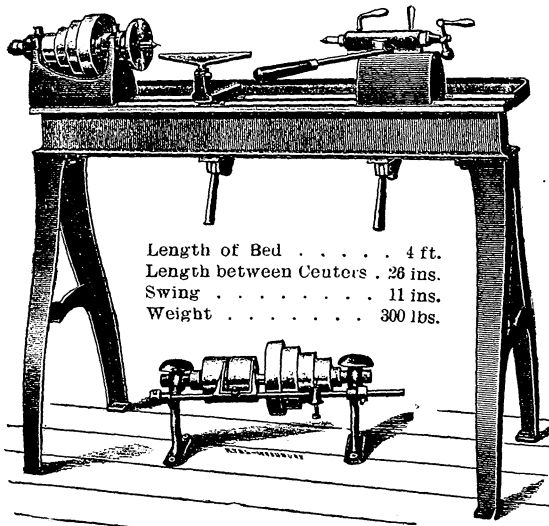
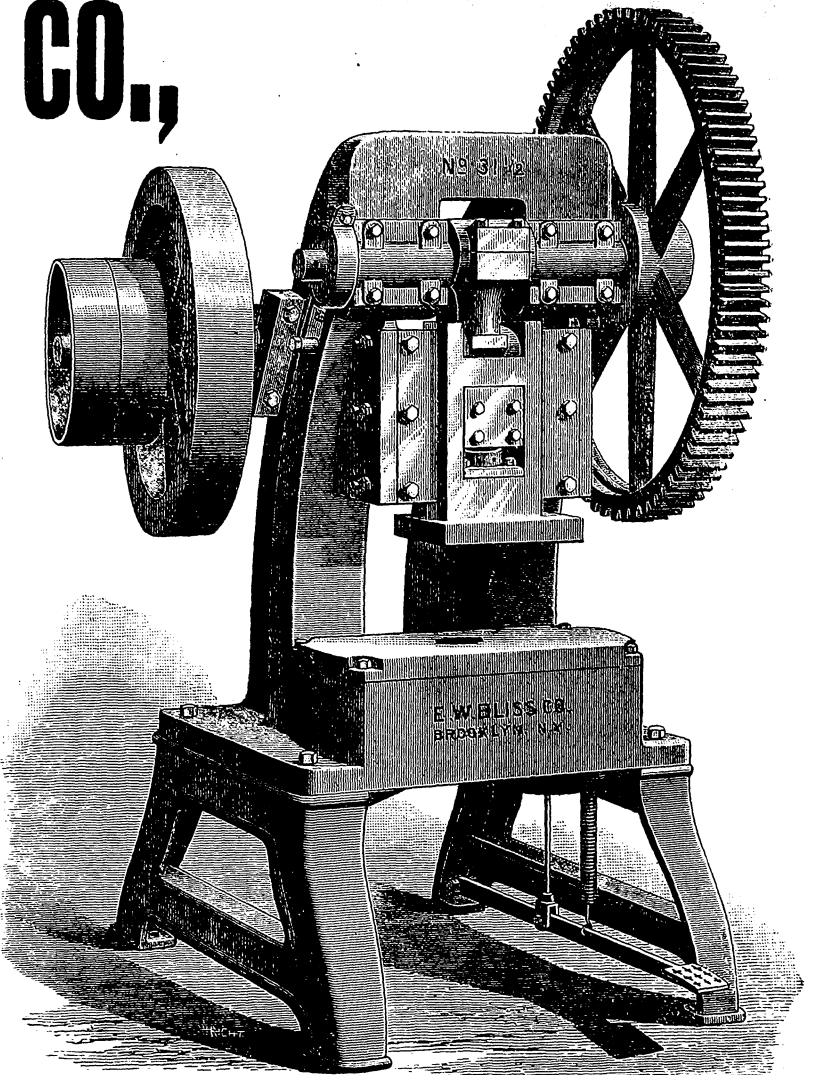
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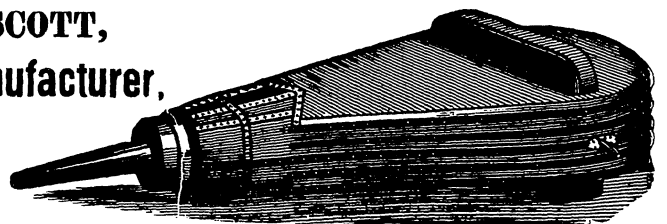
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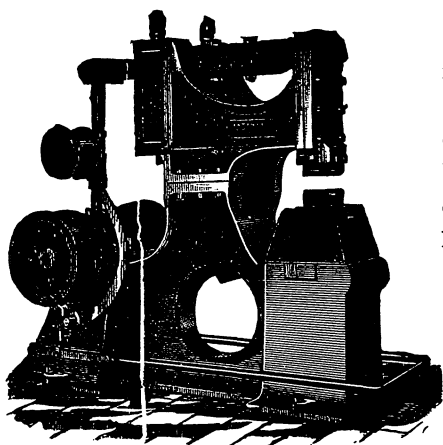
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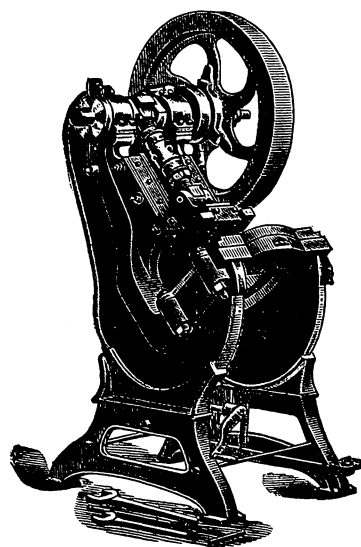


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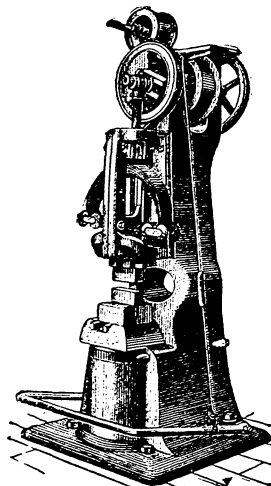
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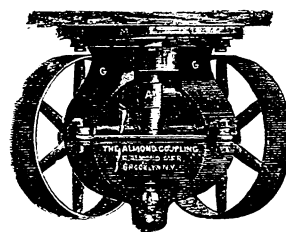
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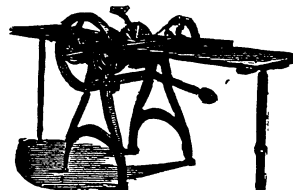
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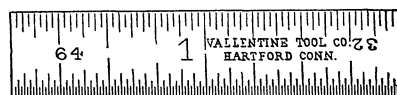
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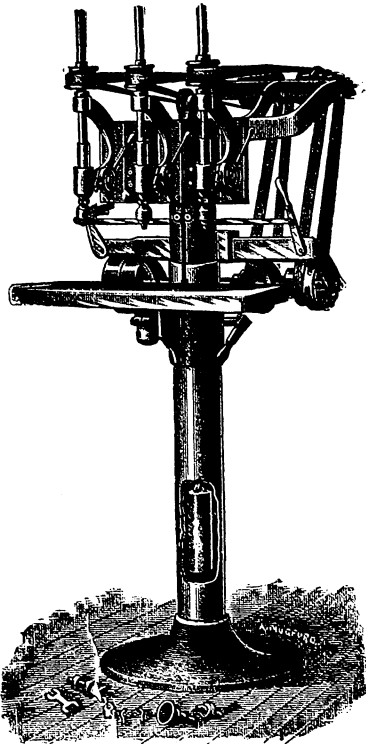
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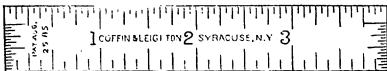


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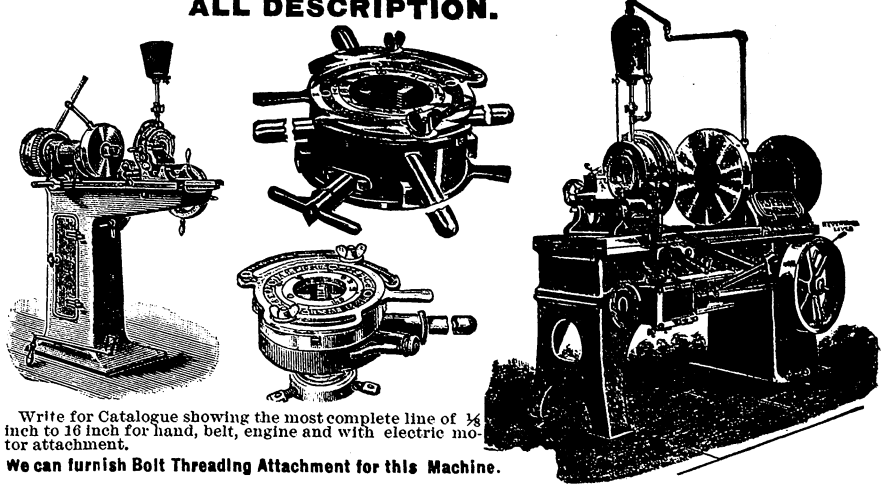
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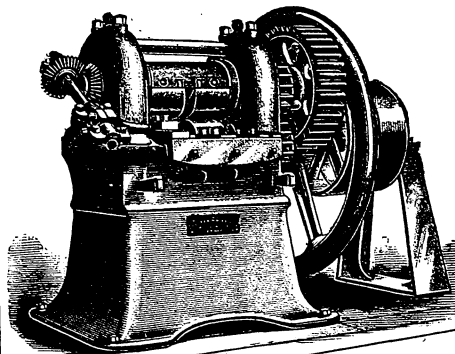
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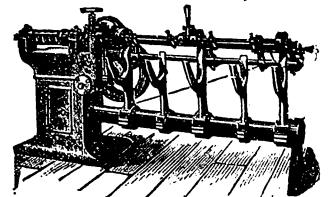
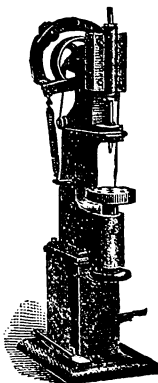
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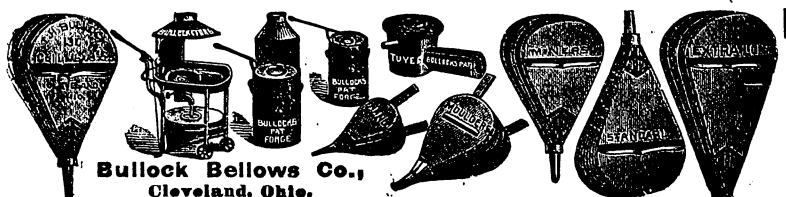
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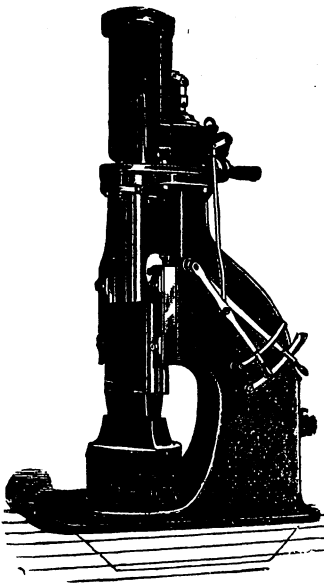
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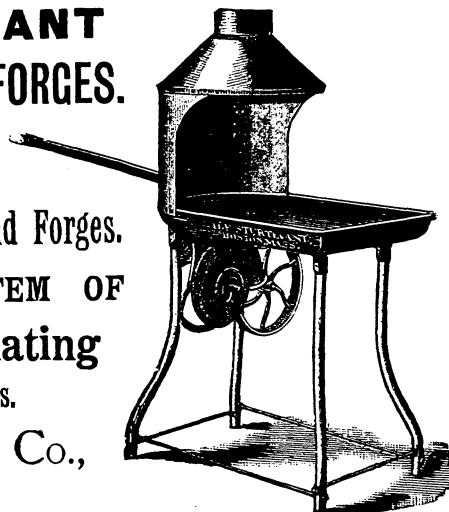
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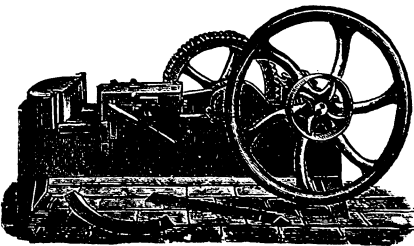
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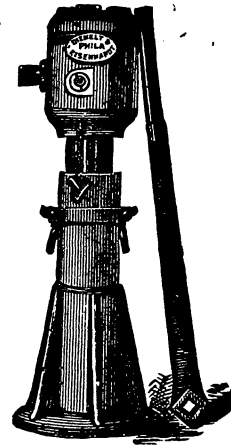
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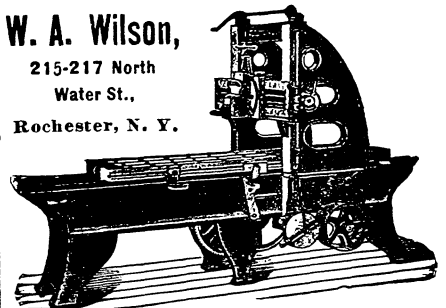
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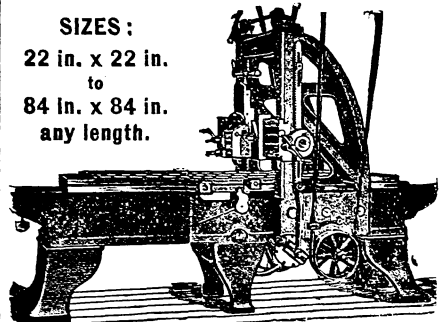
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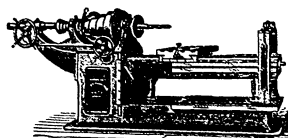
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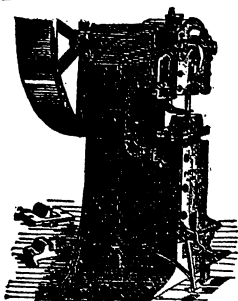


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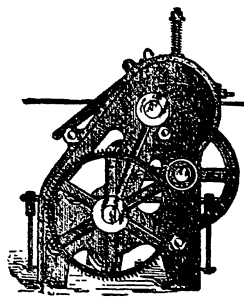
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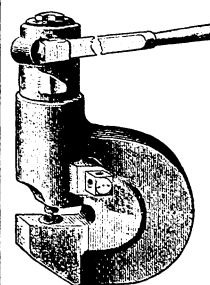
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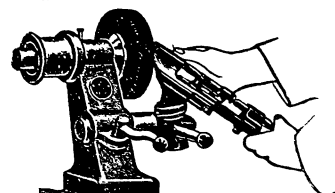
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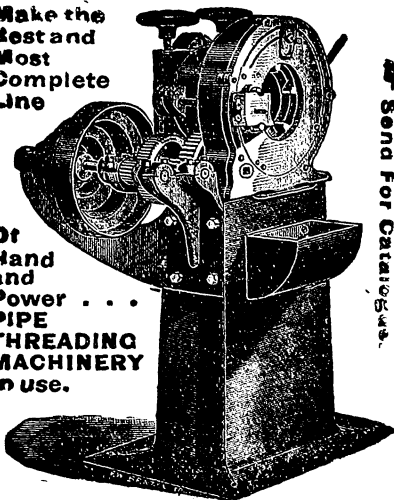
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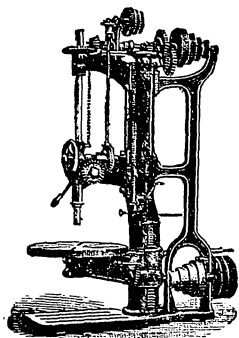


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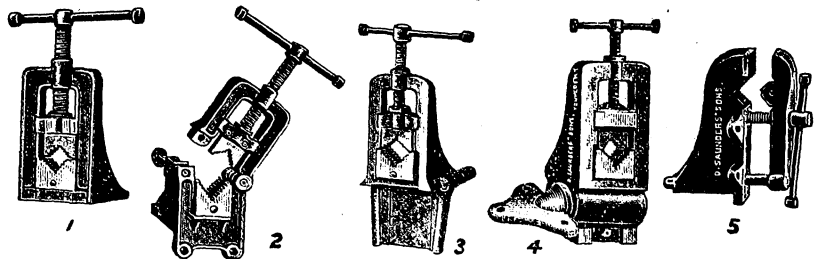
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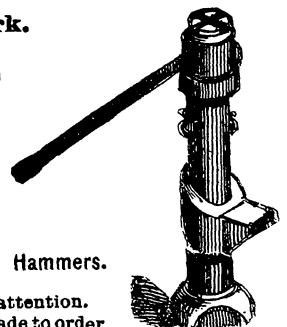
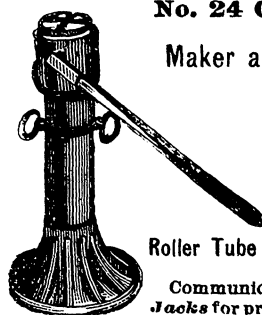
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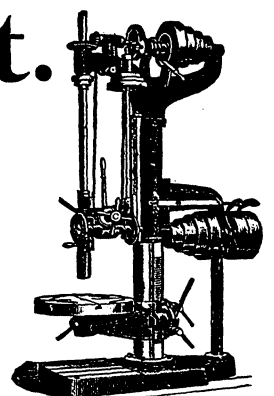
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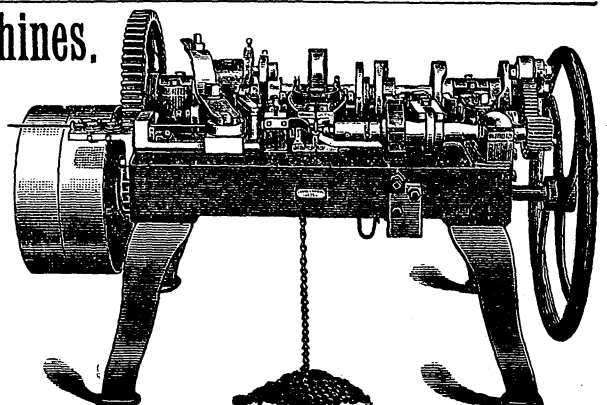
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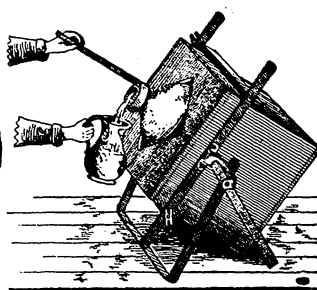
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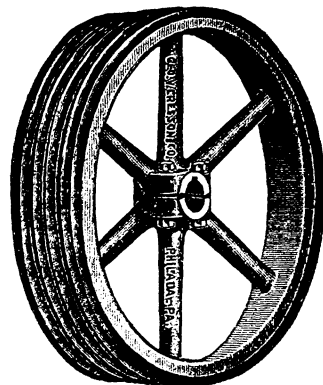
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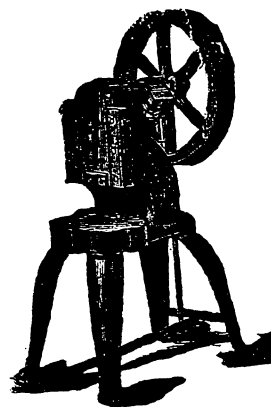
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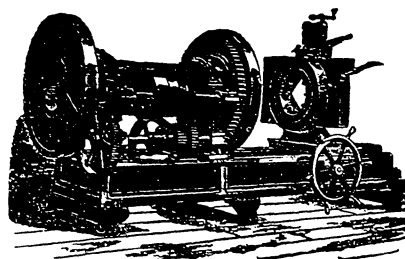
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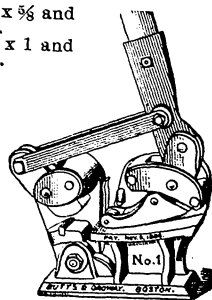
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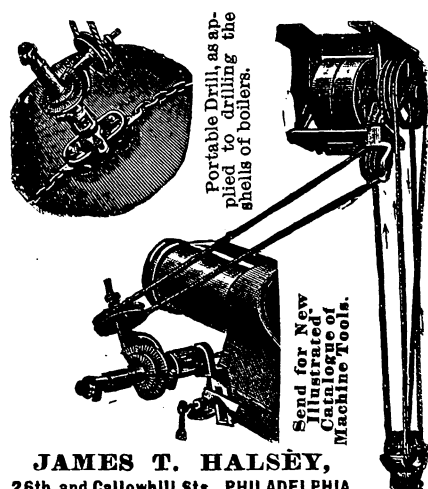
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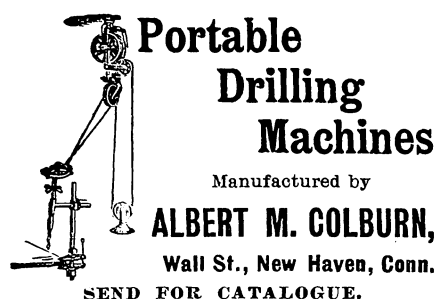
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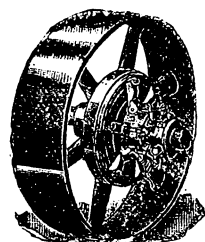
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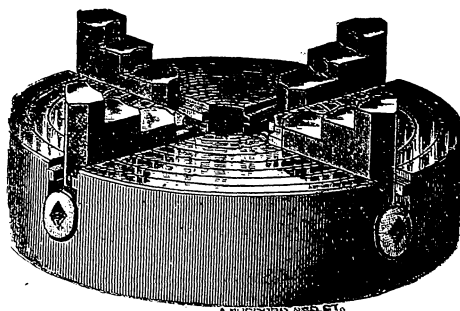
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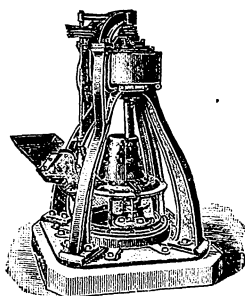
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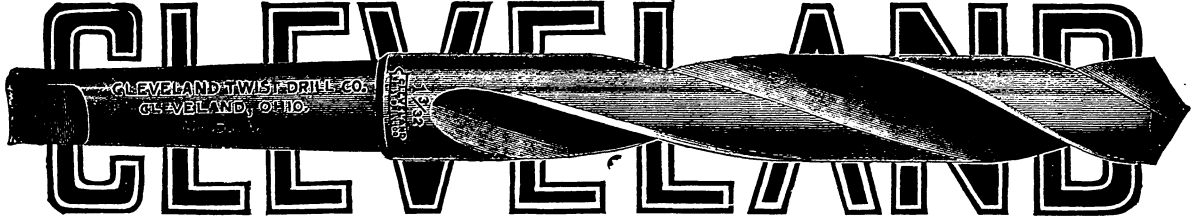
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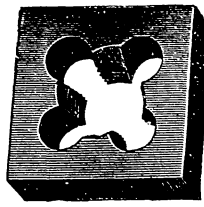
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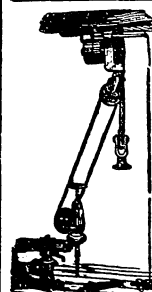
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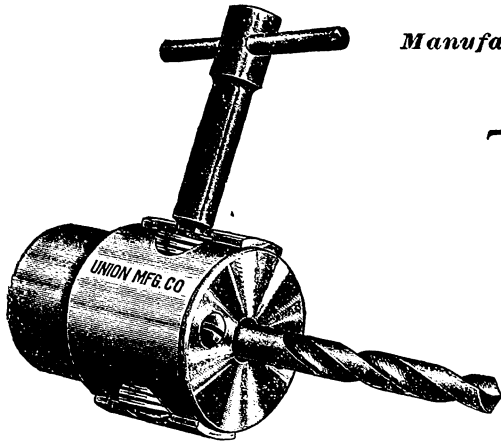
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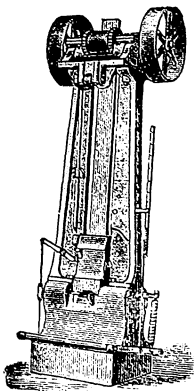
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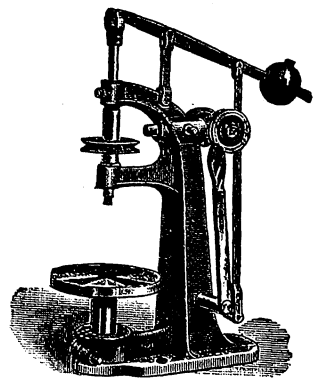
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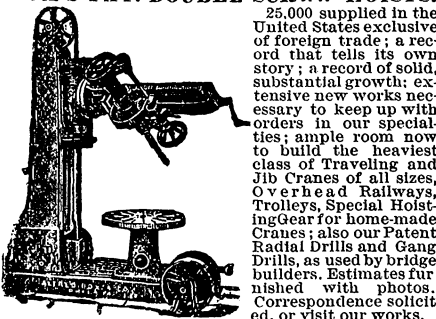
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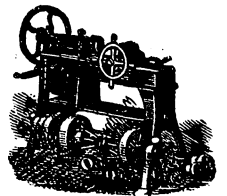


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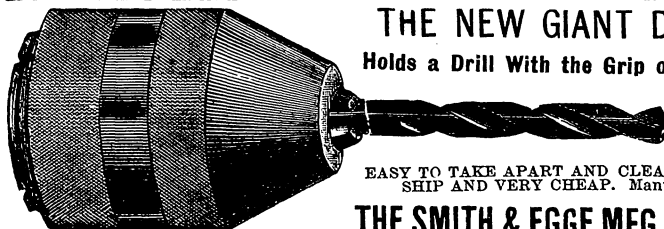
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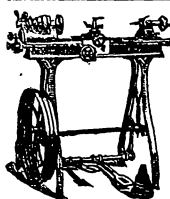
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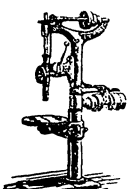
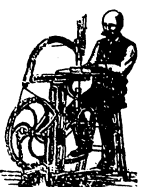
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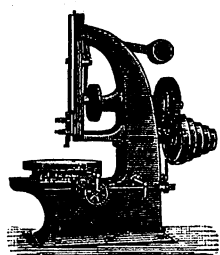
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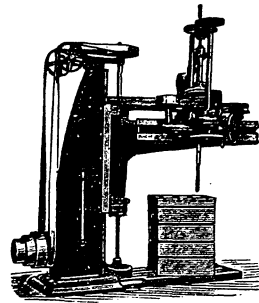
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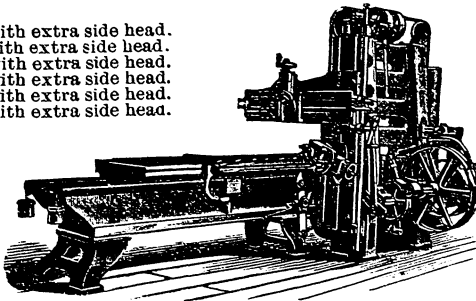
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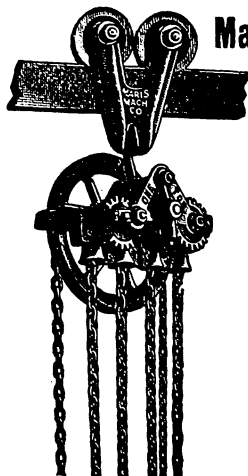


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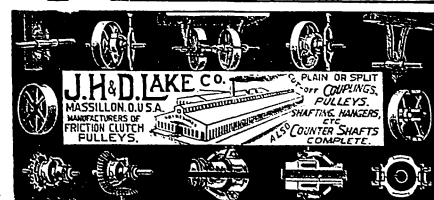
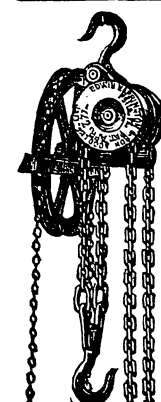
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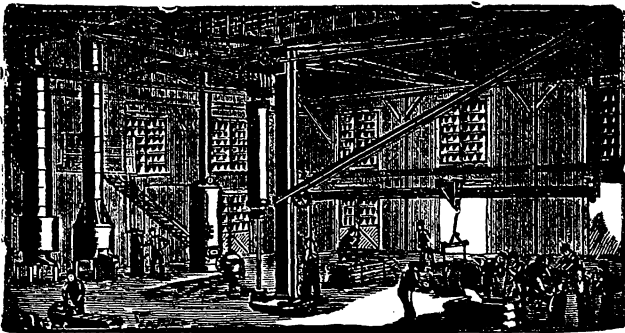
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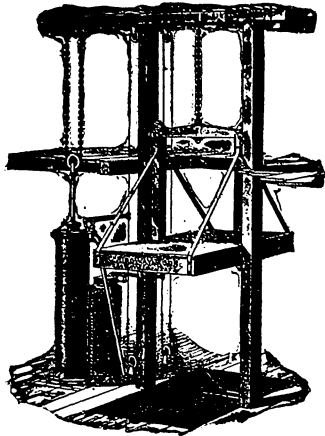
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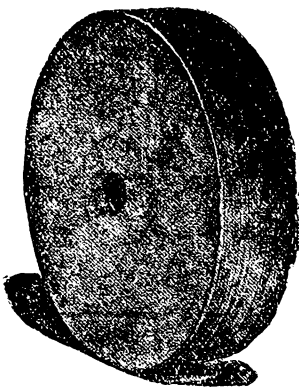
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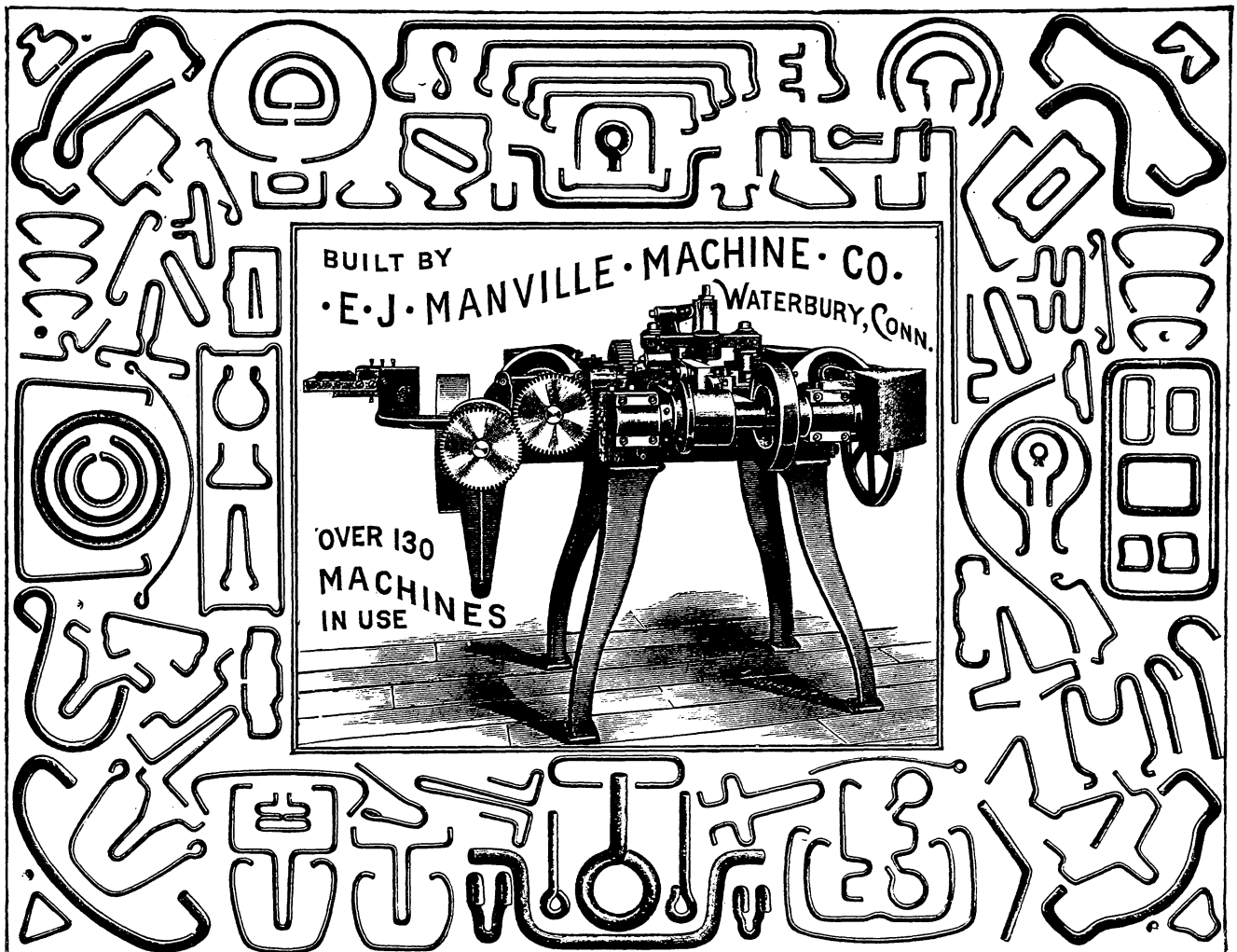


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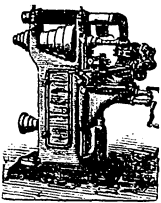
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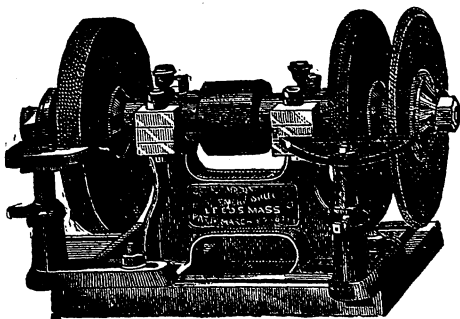
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A PRACTICAL MACHINIST, 35 years of age, late master mechanic for large iron firm in Pittsburgh, wishes situation to take charge of rolling mill or steel works machinery; has had 13 years' experience, understands engines, steam hammers, hydraulic work and general rolling mill machinery; strictly sober and steady; best of references given. Address "MASTER MECHANIC," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

AS SUPERINTENDENT or chief engineer, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, turbines and water works, sheet, plate, and structural iron work, &c.; any one who wants an energetic man to look after their interests will answer this ad. "HUSTER," No. 1019, office of *The Iron Age*, 96-102 Reade St., New York.

PIG IRON SALESMAN desires position. Acquainted with New York State and New England trade. Thoroughly up and good salesman. Address "IRON SALESMAN," office of *The Iron Age*, 96-102 Reade street, New York.

A YOUNG MAN, 28, wants situation with manufacturing concern, either machinery or hardware, as traveling salesman or in factory; is energetic, well acquainted with Western jobbing hardware and sporting goods trade, familiar with manufacture of hardware specialties and handling of men to advantage. Address "NORRIS," office of *The Iron Age*, 96-102 Reade St., New York.

A YOUNG MAN, 25, will change position; eight years with well known and one of largest concerns manufacturing builders' hardware (four as bookkeeper and assistant manager); quick, accurate accountant; experienced in able and economical management, all operating prices and complete data; thoroughly familiar with labor, costs, supplies, etc.; hard worker; can superintend; highest references; satisfactory reasons. "BUSINESS," No. 1019, office of *The Iron Age*, 96-102 Reade St., N. Y.

BY AN EXPERIENCED HARDWAREMAN, ten years' experience, three years' on the road; good salesman and stock keeper; West or Southwest preferred; best of references. Address L. W. VIVION, Benton City, Mo.

AS CHEMIST for iron or steel plant; thoroughly experienced in the analysis of iron ores, pig iron and steel; best of references given. Address "D. C.," No. 119, office of *The Iron Age*, 96-102 Reade St., New York.

GENTLEMAN, aged 36, for many years manager of a jobbing house in this city, dealing in a specialty used by the stove and hardware trade throughout the United States and Canada, is open for an engagement from January 1st with a responsible house requiring the services of a competent and reliable business man as manager, or to fill a similar position of responsibility; 18 years' practical business experience; thoroughly familiar with commercial usages, correspondence, management of salesman, etc. Address "NILO," office of *The Iron Age*, 96-102 Reade St., New York.

A WELL KNOWN and successful Blast Furnace Superintendent or Founder will be open for engagement after Oct. 1st, 1893. Is thoroughly competent as constructor or in the management. Practical, theoretical and in touch with latest improvements in blast furnace practice. First-class record and references. Address "BLAST FURNACE, No. 921," office of *The Iron Age*, 96-102 Reade street, New York.

RESPONSIBLE POSITION by a graduated chemist and engineer in steel works or furnace plants; reference President Midland Blast Furnace Co. Address C. W. Kolbe, Midland, Mo.

BY A MEMBER of the A. S. M. E., expert in shop management and economical production of machinery, as superintendent or manager; well posted on dynamical, hydraulic and mechanical engineering and inspection of materials. Address "W. O. W.," office of *The Iron Age*, 96-102 Reade St., New York.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

SALESMEN visiting hardware trade to carry patented article in constant use as a side line; liberal commission, big seller. Address "GALLT," 85 Franklin St., New York.

FOR THE SOUTHERN, Eastern and Western trade, traveling salesmen, to sell on commission to consumers an article used by machinists, engineers, plumbers, &c. Address "C. W. G.," No. 2015, office of *The Iron Age*, 96-102 Reade St., New York.

SALESMEN visiting the jobbing and large retail trade in hardware and house furnishing lines, in the South and West, to sell as a side line, on commission, a first-class specialty. Address "BUCKET BOTTOMS," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

MAN EXPERIENCED in soliciting orders for castings for gray iron foundry; a good opening for the right man. Address "JOBING," office of *The Iron Age*, 96-102 Reade St., New York.

A THOROUGHLY practical mill manager to take full charge of plant making specialties in crucible and open hearth steels; give particulars as to experience and business qualifications; communications strictly confidential. Address P. O. Box 833, Pittsburgh, Pa.

SALESMEN to sell on commission to the hardware, plumbing and rubber trade the best and cheapest line of lawn sprinklers made; see advertisement in this paper. Address ERTE & HENGER MANUFACTURING Co., St. Louis, Mo.

A SOBER, RELIABLE MAN to take charge of out nail machines and bolt and nut machines. Address COMPANIA INDUSTRIAL MEXICANA, Chihuahua, Mexico.

SALESMAN with experience and trade in cutlery and hardware in New York State; state salary expected and where last employed. Address "EXPERIENCE AND TRADE," office of *The Iron Age*, 96-102 Reade St., New York.

COMPETENT FOREMAN in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

FREE.

You can have one of these display stands for exhibiting Royal Roasters and Bakers free of charge by ordering a sample line of the goods.



Write for Illustrations of our New Household Inventions.

SILVER & CO.,

304-310 Hewes St., - BROOKLYN, N. Y.

DO YOU USE

LEATHER PARTS,

Straps, Washers, or Special Shapes in

Leather, hand or machine sewed

Leather Work of any description,

Skate Straps or Mountings?

Write for Estimates, mentioning this paper, to

J. FRANK GREENE & CO.,

276 Water and 14 Dover Sts., NEW YORK.

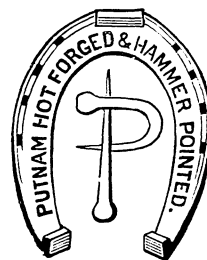
Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded :
*"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch.
 It allows the use of very small nails."*

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."

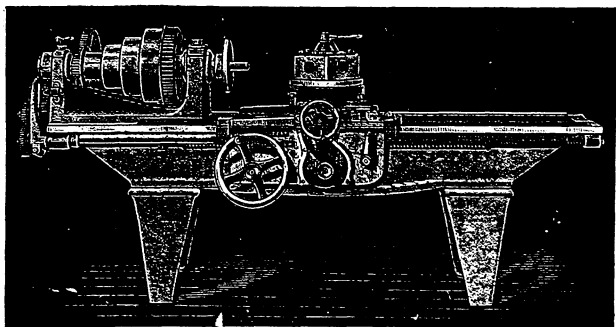
Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,

Neponset, Boston, Mass.



TURRET
MACHINES
LATHES,
MILLING
MACHINES,
SPECIAL
MACHINERY,

JOHN L. BOCERT, FLUSHING, N. Y.

1894 - POST'S - IMPROVED - EUREKA'S,
THE SUGAR MAKER'S FIRST CHOICE.

The Only Sap Spout made on Scientific Principles. The Flow of Sap Greatly Increased by the Self-Sealing Air Trap in them.

Over 20,000,000 sold to replace Various other Kinds.

Twenty-five per cent. More Sugar and a Better quality than from any other, is the verdict of over 40,000 Maple Sugar makers who use them. Their perfect working with satisfaction is guaranteed.

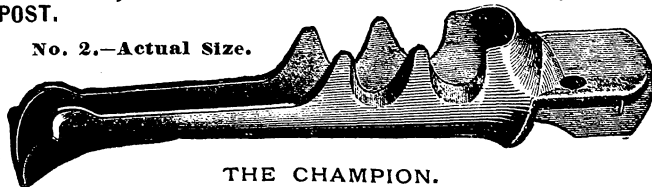
Agents wanted in every Maple Sugar Town. Descriptive Circulars with price-list and Sample Spout sent free to the trade only. Owing to the usual heavy orders at this season of the year it is expedient that all orders for the coming sugar season be forwarded as soon as possible, to give the required time for supplying all demands, and that shipments by freight can be made so as to reach their destination in due season. All orders will be shipped by freight unless otherwise specified in the order.

Write Immediately and secure early orders.

CHARLES C. STELLE, 81 5TH AVE., BROOKLYN, N. Y.
Successor to C. C. POST.

No. 2.—Actual Size.

Sold by the
best Jobbing
Houses.



THE CHAMPION.

C. F. RICE,

206 So. Green St., - - CHICAGO.

Largest wholesale house in America for Mirrors of all kinds, Pictures, Mouldings, Frames, Brackets, Easels, Screens and kindred goods. Large illustrated catalogue sent to Dealers upon application.

BLOWING ENGINE FOR SALE

Vertical pattern, with balanced steam slide valve gear, steam cylinder 14 in. diameter, air cylinder 40 in. diameter, stroke 24 in. 1 to 100 strokes per minute; engine new.

JAMES LEFFEL & CO., Springfield, Ohio.

KEEP BOOKS

by WEST'S New Original-ENTRY LEDGER.

Make the same entry but once. A Ledger in place of a full set of books. Convenient forms for all entries. Easily applied, simple, saves time. West's Self-Proving Balance locates every error. Send 3 2-cent Stamps for illustrated 16-page pamphlet.

WOLCOTT & WEST, Syracuse, N. Y.



The Scattergood

Time Record and
Pay Roll Book.
(Pat. Oct. 13, 1891.)

Address for Circular to
HENRY W. SCATTERGOOD,
23 Richmond St., Phila., Pa.

**IF YOU WANT
A NIAGARA DYNAMO OR MOTOR**

or if you are a dealer and want an Agency send for our Catalogue and Price-List.

LOVELL MFG. CO., LTD., ERIE, PA.

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THE STEEL AND IRON IMPROVEMENT CO.,

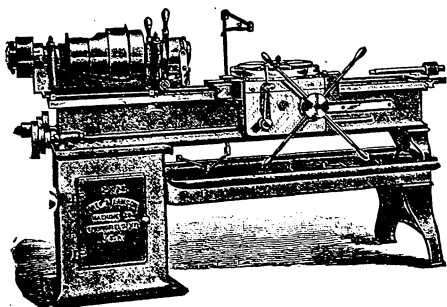
Controlling the Adams-Blair Process and other Steel and Iron Patents.

High Grade Open Hearth Steel produced by the Adams-Blair Process at less than the Cost of BESSEMER Steel.

91 and 98 Fifth Ave., Pittsburgh, Pa.

EASTERN OFFICE: 412 Drexel Building, Philadelphia, Pa.

HAVE YOU A
FLAT TURRET LATHE ?

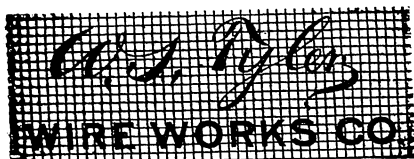


If not send for

RAPID LATHE WORK.

JONES & LAMSON MACHINE CO.,

SPRINGFIELD, VT., U. S. A.



MANUFACTURERS OF

"The Tyler"

PAINTED, POWER LOOM

Fly Screen Cloth

Standard Mesh and Wire with Double Selvedge.
W. S. TYLER, Pres. PROCTOR PATTERSON, Sec. & Treas.
CLEVELAND, OHIO.

ANALYTICAL
AND ASSAY **LABORATORIES**

—OF—
DR. GIDEON E. MOORE

221 PEARL ST., (Corner Platt St.,) NEW YORK.

Assays of Ores, Metals and Metallurgical Products of every description.
Analysis of Water, Ores, Minerals, Metals, Fuel, and Natural and Industrial Products generally.

PRINTED PRICE-LIST ON APPLICATION.

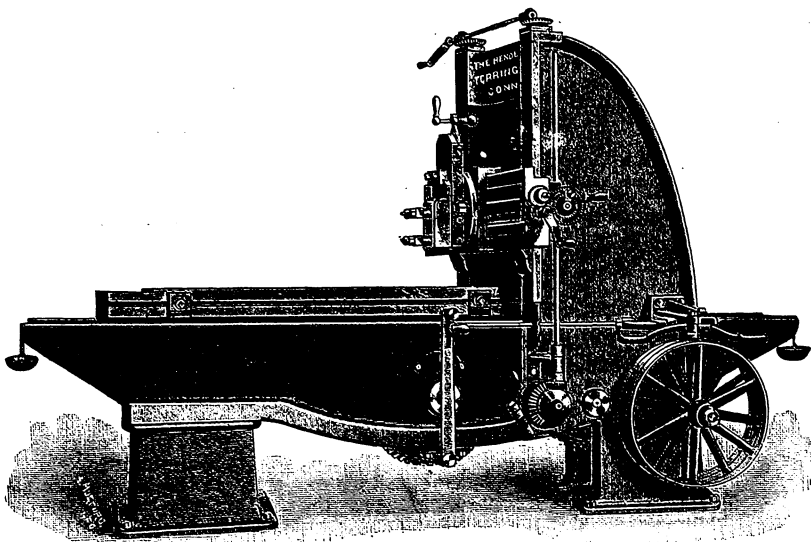
ALUMINUM.

The Pittsburgh Reduction Co.,

116 Water St., Pittsburgh, Pa.,

Offer Aluminum guaranteed equal in purity to the best in the market, at lowest rates obtainable.

**ALUMINUM SHEET, WIRE,
AND CASTINGS.**



Iron Planers at Reduced Prices.

We have on hand a few new planers of this pattern, and in order to dispose of them quickly, we would make a good reduction in price of same. The sizes are 16 inch, 22 inch, 24 inch and 27 inch. If you are in need of a good planer write us for prices on these.

The Hendey Machine Co., Torrington, Conn.

DO YOU BORE CYLINDERS?

THE HORIZONTAL BORING MACHINE

IS A SPECIAL TOOL FOR THIS PURPOSE.

SEND FOR PARTICULARS TO

NEWARK MACHINE TOOL WORKS

NEWARK, N. J.

J. A. FAY & Co., CHICAGO, WESTERN AGENTS.



Which Bicycle Wins the Most Races?

E. C. Stearns & Co. of Syracuse, N. Y., could tell you, but had just as lief you would look in your daily Newspaper.

ARE YOU HERE TO MAKE MONEY?

IF SO, THE PRICES WE ARE MAKING ON
OIL HEATERS AND GAS STOVES
WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B. & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. They can be used in place of a range in the kitchen or in place of a base-burner in the parlor. They are thoroughly well adapted to fill all requirements, combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.

If you happen to have one of them upstairs, the tank can easily be removed and taken down to the kitchen to be filled, and again replaced in the Stove.

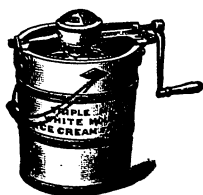
Those who have used the old style Stove with tanks fastened in them as tight as if cast in the iron will appreciate this feature. They can be fitted with our 2-hole, 3-hole or 4-hole Extension Tops for regular 8-inch ware. We want your trade, and if you will give us a chance to quote you prices we will have it.



ASK FOR OUR NEW 80-PAGE CATALOGUE.

W. W. MONTAGUE & CO., San Francisco, General Agents for the Pacific Coast.

The Glazier Stove Co., Mfrs., CHELSEA, MICH.



The standard by which the merits of a Freezer are gauged is, how near it comes to being as perfect as the

WHITE MOUNTAIN ICE CREAM FREEZER.

It always has been, and is still, the best. Try them.

Manufactured by The White Mountain Freezer Co., Nashua, N. H.



THE OLD RELIABLE STANDARD FREEZER

has the reputation of being the BEST ICE CREAM FREEZER ever introduced. STRENGTH, DURABILITY, NEATNESS AND EFFICIENCY are prominent points in the manufacture. Full Size Can, CEDAR TUB, Detachable Hinged Crossbar, Self-adjusting Vibratory Scraper, etc.

Write for Illustrated Circular, Price-List and Discounts of STANDARD, GOOD LUCK, MODEL and MACHINE Freezers.

CHAS. W. PACKER, Mfr.,

20 North Fourth Street, Philadelphia.

THE "New" Keystone Beater,

No. 20 for Family Use.

JAR ENTIRELY COVERED.

No more Spattering.

CAN BE USED ANYWHERE.

Standing or Sitting.

ALWAYS READY FOR USE.

Nothing to be fixed.

SIMPLY PERFECT.

No. 20.—Jar holds 1 quart level full, Complete Machine securely packed in one single package. 1/2 dozen packed in case.

MANUFACTURED ONLY BY

NORTH BROS. MFG. CO.,

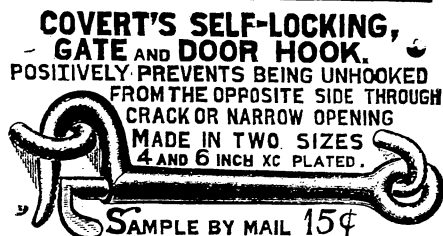
Manufacturers of Hardware Specialties for Household use
American St. and Lehigh Ave., Philadelphia, Pa., U. S. A.



FOR
WHIPPING
AND
BEATING
EGGS.
MIXING
BATTERS, DRINKS,
SAUCES, ICINGS,
POWDERS, ETC.
CREAMING
MELLOW FRUITS,
BANANAS, PEACHES,
BERRIES,
BUTTER & SUGAR.



BARGAINS IN BICYCLES.
Write for latest list and catalogue free. **Stylphs,** Overland and Hedges of our own manufacture on favorable terms to the trade; **Western Wheel Works'** Cycles of which we are largest Western jobbers at Bed-Rock prices. Positively 20 to 60% saved on many styles. The low prices and high quality of our goods will surprise you. Don't miss it. Write now. Cycles sold on easy payments.
ROUSE, HAZARD & CO., 146 G St., Peoria, Ill. Manufacturers, oldest and largest jobbers in U. S.



Call for Our Banner Bolt Snap:

This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substance and freezing, and is lower in price.

Made in all sizes; Round, Loop and Open Eye. We are headquarters and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

Covert's Saddlery Works,

FARMER, N. Y., U. S. A.

Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONNOR SLOAN, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated. . . . \$1.00

For sale by David Williams, 96-102 Reade St., N.Y.

Hardware Dealers Can Profitably SELL BICYCLES.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

Pope Mfg. Co.,
221 Columbus Ave.,
Boston, Mass.



1846.

1893.

Forty-seven years of Increasing Skill
and Ingenuity in making
**STEEL BUTTS, BOLTS
and HINGES.**

CATALOG FREE.

THE STANLEY WORKS, New Britain, Conn.
79 Chambers St. N. Y.

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REID DRILL CHUCKS.

THREE SIZES.

No. 0 takes any drill from 0 to 1-2 inch inclusive.

No. 1 " " " " 0 " 3-4 " "

No. 2 " " " " 0 " 1 " "



They are the strongest and most durable made. Drill absolutely in the center. No twisting or bending necessary if drill is straight. Can be fitted to hollow spindle lathes for working long rods.

SEND FOR CIRCULAR.

R. H. BROWN & CO., - New Haven, Conn.

*You take no risk on the quality.
We make only the best!*



**Sand
Papers**
IN
Reams and Roll

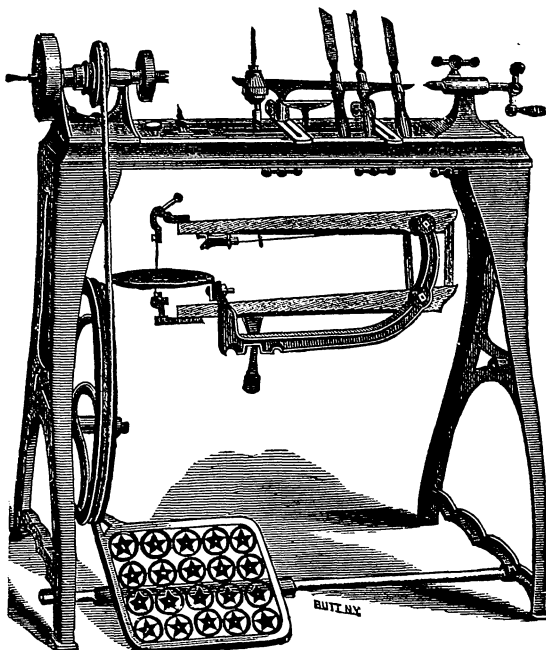
Filnt Paper
Garnet Paper
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HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

BAEDER, / DAMSON & CO.

730 MARKET STREET, PHILADELPHIA;
87 BECKMAN STREET, NEW YORK.
143 MILK STREET, BOSTON;
282 LAKE STREET, CHICAGO.

HOLIDAY GOODS.



Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

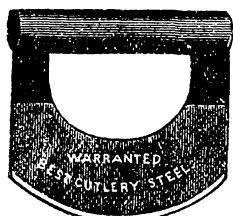
We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

Price of Goodell Lathe, complete, \$12.00.

Price of Rogers Saw, complete, \$3.50.

MILLERS FALLS CO.,
No. 93 Reade Street, New York.

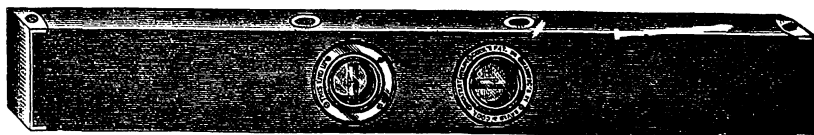
THE GEM SOLID STEEL MINCER



Single
and
Double Blades.

Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen,
Split, or Fill with Rancid Grease.

MANUFACTURED BY
PALMER HARDWARE MFG. CO.
TROY, N. Y.



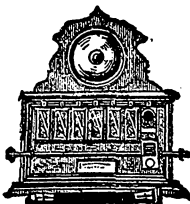
**COOK'S
PATENT
LEVEL.**

Made in Wood and Iron. Every Level Fully Guaranteed.

Inquire at your nearest hardware store for them. If not in stock, send to

TAKE NO
OTHER.

DAVIS & COOK,
WATERTOWN, N. Y.



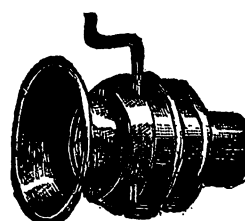
W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,

Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC
MECHANICAL AND PNEUMATIC ANNUNCIATORS
AND BELLS.

Complete outfits of Speaking Tubes, Whistles
Electric, Mechanical and Pneumatic Bells. A full line
always in stock. Send for new catalogue. Factory,
DeKalb ave. near Knickerbocker Brooklyn, N. Y.



CABINET LOCKS

OF EVERY KIND.

DRAWER LOCKS,

CUPBOARD LOCKS,

WARDROBE LOCKS,

CHEST LOCKS.

DESK LOCKS.

A complete line of more than 1000 list numbers exclusive of our old
and complete line of

YALE CABINET LOCKS.

THE YALE & TOWNE M'F'G CO.,

STAMFORD, CONNECTICUT.

New York. Chicago. Philadelphia. Boston. Pittsburg. San Francisco.

THE DEALER who sells what
THE PEOPLE ask for.

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

The people ask for

LePage's Liquid Glue,

And the people are right.

It is the strongest and best glue made. It has been
imitated, but never equalled. Be sure to get what you
order and ACCEPT NO SUBSTITUTES.

Our name is on every label

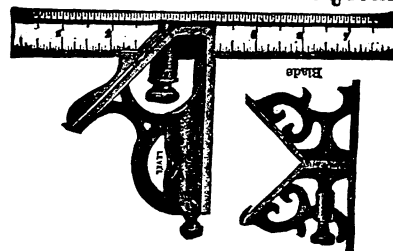
RUSSIA CEMENT CO.,

GLOUCESTER, MASS.

New York Office, 95 Reade and 113 Chambers Streets.

Pacific Coast Office, 23 Davis Street, San Francisco, Cal.

CHAPLIN TRY AND CENTRE SQUARE.



Also a full line of

MACHINISTS' FINE TOOLS.

If you haven't our 1893 catalog send us a postal card.

STANDARD TOOL CO.,

ATHOL, MASS., U. S. A.

ATHOL MACHINE CO., Selling Agents.

NONPAREIL

Ratchet Wrenches.

Made of best forged Tool Steel; are
easily and readily adjusted and con-
trolled. Can be made reversible in-
stantly without removing from their
work by throwing over the lever in
slot of the handle.

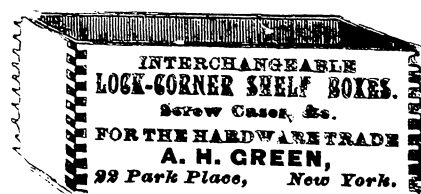
The Set of Combination Tools No. 1
includes the wrench, two sockets, one
for screw-driver, bit or reamer shank,
with wood handle, and one socket



I
for drill shank and feed nut. The
jaws on this wrench open from 3-16
to 1 1/4 inches.

Send for Illustrated Circular
and Price-list of various sizes

The Keystone Mfg. Co.
312 Terrace, Buffalo, N. Y.



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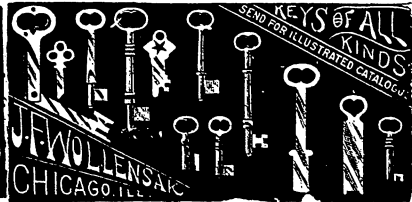
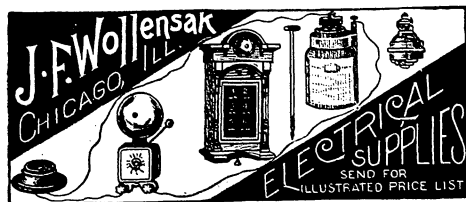
WE MAKE ONLY

The Very Highest Grade

OF

MECHANICS' TOOLS.

H. H. MAYHEW & CO., Shelburne Falls, Mass.



W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

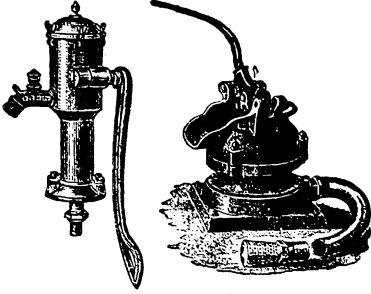
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209.

Fig. 381.

Fig. 145.



or wherever it is desired to raise a large quantity of water by
hand power.

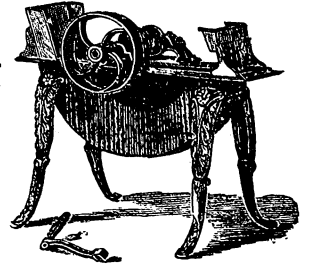
The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.



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HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.
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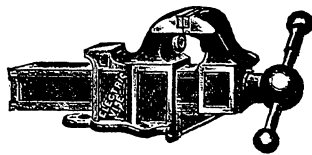
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WORLD'S FAIR PUMPS
THE LARGEST PUMP EXHIBITION
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The New York Safety Dumb Waiter.
"The Manhattan Dumb Waiter."
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Made specially to be sold by Hardware Stores.
Thousands in use. Catalogues on application.
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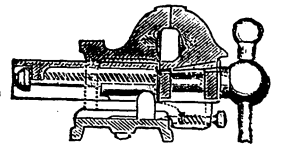


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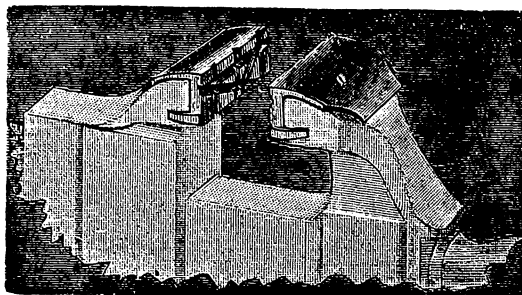
IT HAS QUALITIES THAT ARE
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Rapid, Active, Prompt.

One movement in and out, one
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The Capital Machine Tool Co., AUBURN, N. Y.



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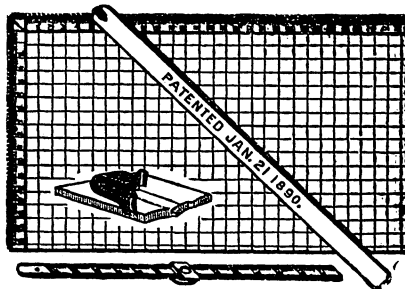
Will Fit any Kind of Vise.

For protecting finished work. Will
hold finished rods of any shape without
injury.

3 1/2 inch.....per pair, 40 cents.
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The Canton Glass Board.

Cuts any Fraction of an Inch by Eighths.

Unequalled for accuracy and quick work in cut-
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IMPROVED TRAMMEL RULE for Cutting Circles
From 3 inches up to 48 inches, Segments,
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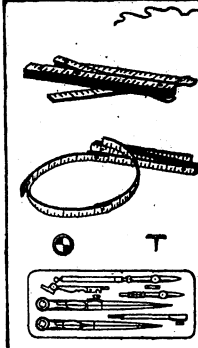
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Special Cob Breaking Device and peculiar dress
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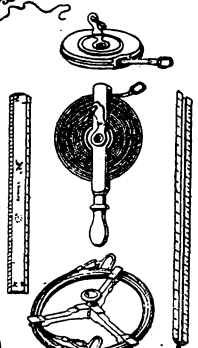




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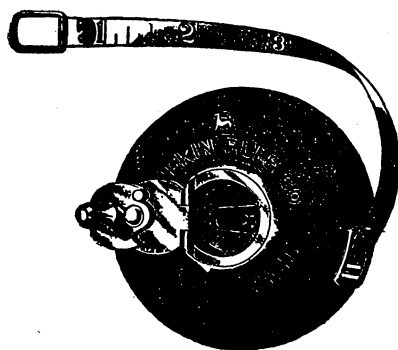
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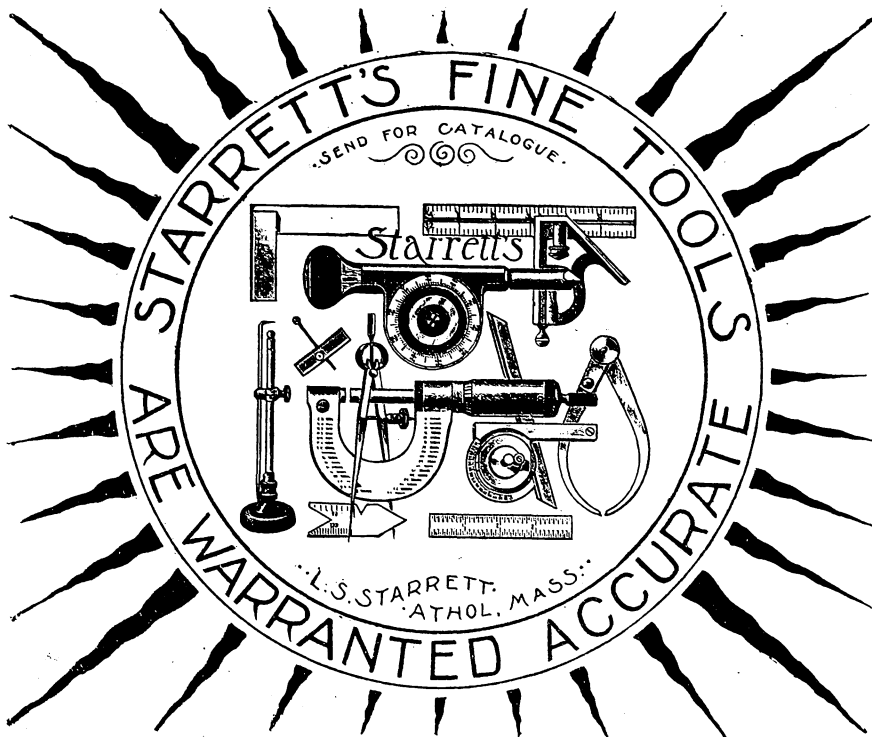
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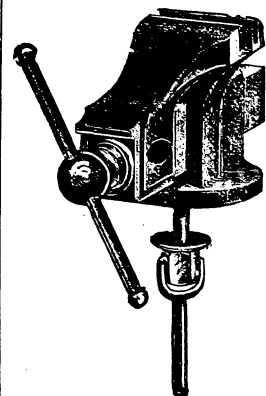
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They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle. Tubing weighs less than 14 lb. per ft., is connected by couplings and can be attached to any make of curb.



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Specially adapted for drill press work where chucks can not be used and equally good for special or regular bench work.

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Manufacturers all
styles VISES.



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Manufacturers of
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Berger's Celebrated Pail Ears,
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Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough untempered steel, never to break or bend. Only Anvil made in the United States fully warranted as above.

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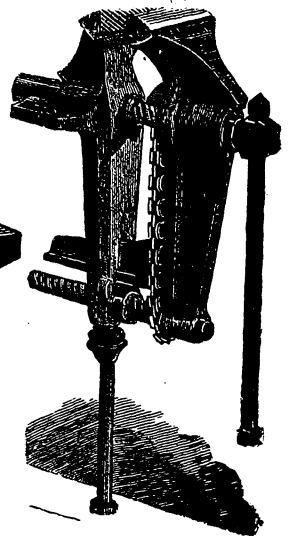
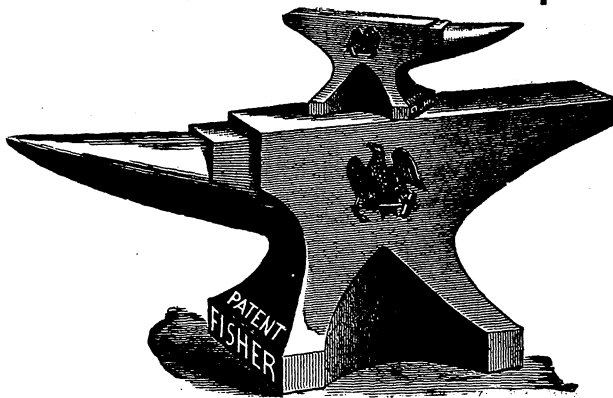
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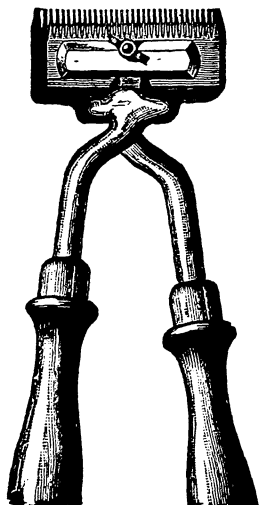
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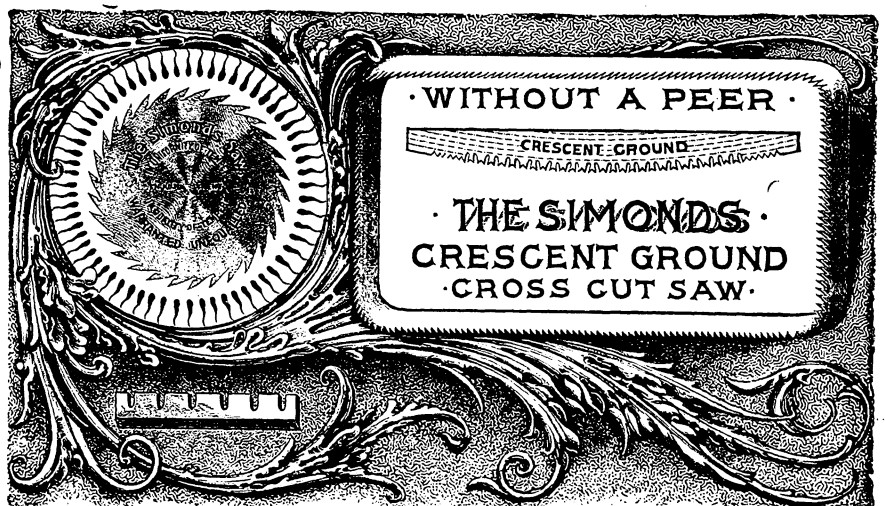


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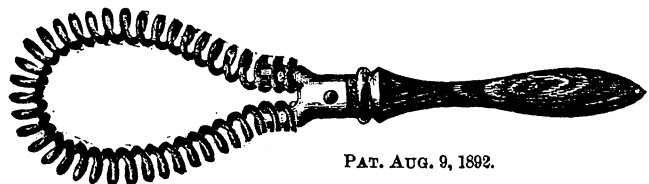
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At prices to suit
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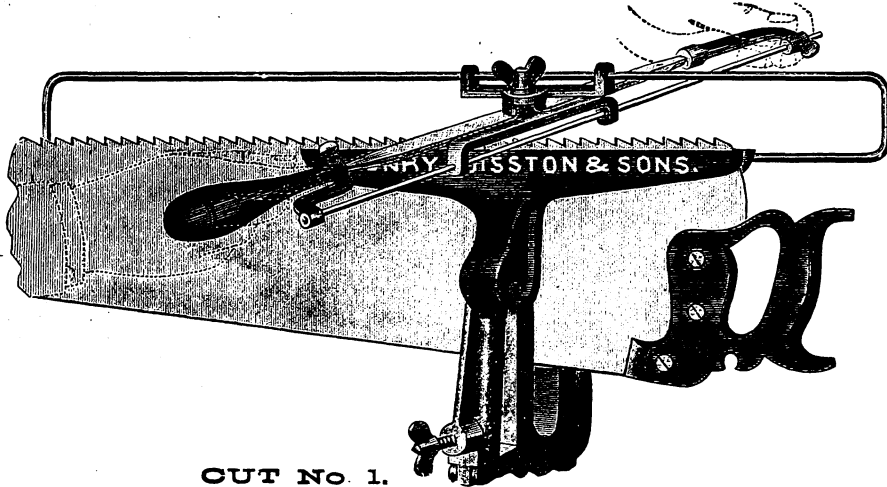
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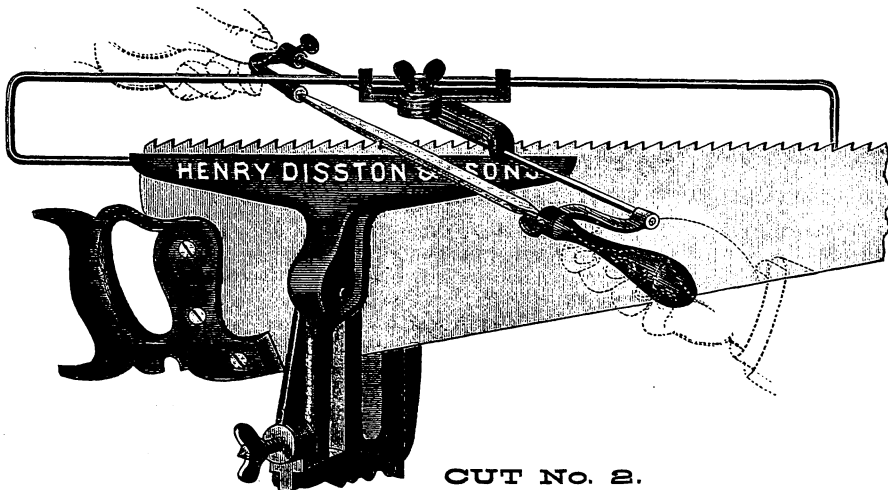
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box

Henry Disston & Sons, Philadelphia, Penn. INCORPORATED,

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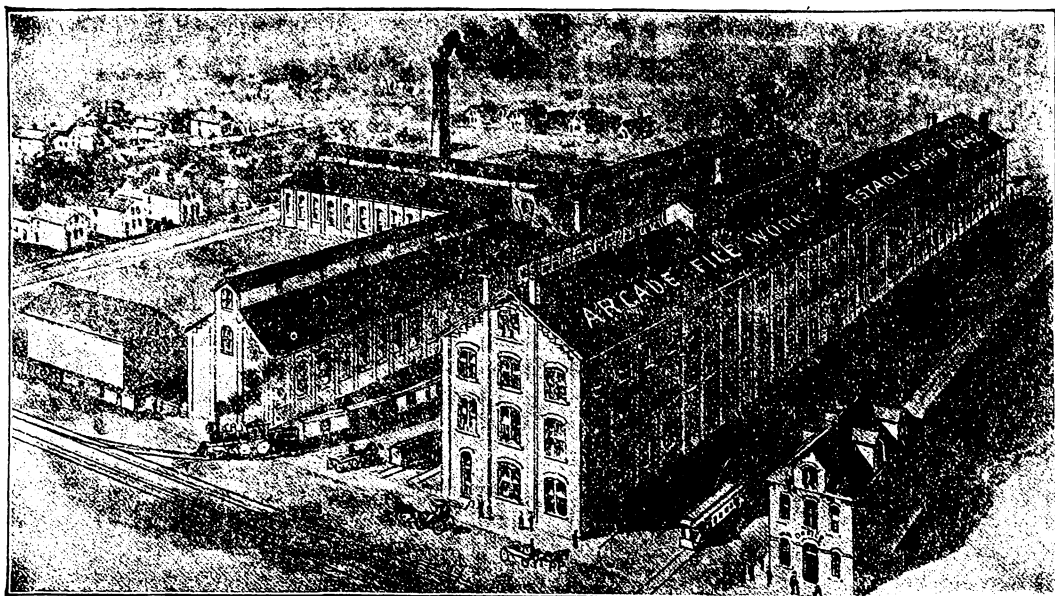
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THE FILES THAT LEAD THEM ALL.

THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market.

Just Published.—THIRD REVISED EDITION. THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

Saucepans and Round Boilers.

Pints.	Plain	Turled.	Tin'd or En'd.
1	\$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3¼ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Wrenches.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a Third edition is already called for.

EVERY HARDWAREMAN SHOULD HAVE A COPY. Price 25 cts.

Sent, postpaid, on receipt of Price, by

DAVID WILLIAMS, Publisher and Bookseller, 96-102 Reade Street, N. Y.

Stove Hollow Ware.

POTS, KETTLES, ETC. (CAST IRON.)

No.	6	7	8	9	10	11
Pots.....	\$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

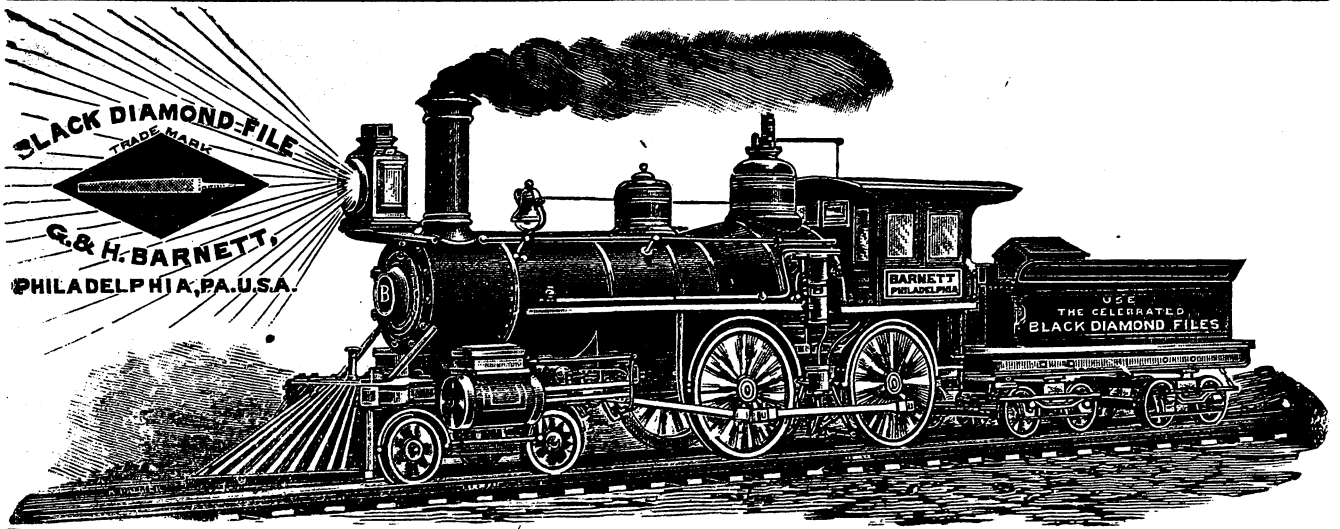
SCOTCH AND YANKEE BOWLS.

No.	1	2	3	4	5	6
Scotch Bowls..	\$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Glue Pots.

No.	4/0....	\$4.50	No. 2	....	\$8.40
3/0....	5.00		3	....	10.26
2/0....	5.50		4	....	12.42
0	6.00		5	....	14.58
1	6.75		6	....	16.94

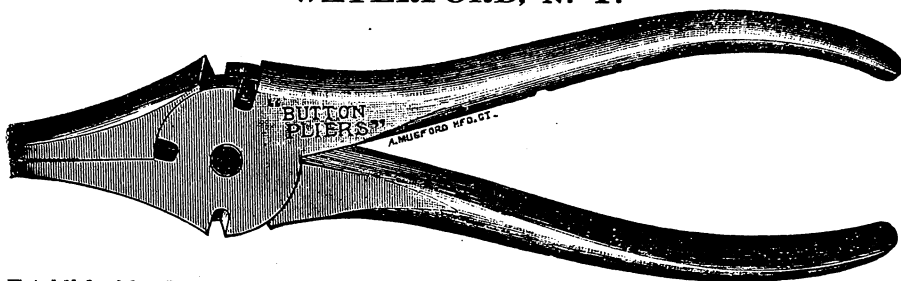
Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out



J. M. KING & CO.,
WATERFORD, N. Y.

Manufacturers of
BUTTON'S

Pat. Wire Cutter
AND PLIER COMBINED.



Specially Adapted for Use on Wire Fence.

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TAPER TAPS, HAND, NUT and SCREW
TAPS, PIPE TAPS and REAMERS.

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Established by DANIEL B. KING, 1829.

Philadelphia, 1876.



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For Superiority.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

BEST		"TROJAN" HORSE RASPS.		LOWEST	
CRUCIBLE				IN	
STEEL.				PRICE	
STRONGEST		BANKER & WHITE,		LET	
TOOTH.		(Troy File Works.)		US	
				QUOTE	

The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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DETERMINATION OF THE HOUSE TO SEND OUT NOTHING BUT WHAT IS OF THE HIGHEST POSSIBLE QUALITY.

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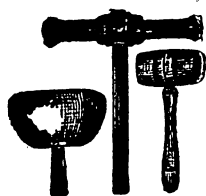
Joseph Rodgers & Sons, Best Cutlery in the world; W. K. & C. Peace, unrivaled Grass Hooks Straw Knives and Scythes; Joseph Elliot & Sons. Celebrated Razors; Peugeot Frères, "Frenoh Toilet" and other Clippers; L. Hugoniot Tissot Fine Steel Plyers, &c.; Eley Bros., Caps, Wads Cartridge Cases, &c.; Webster & Horsfall, Steel Wire of every description.

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Our specialties are Meat Cutting Machine Knives—
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RIDGWAY, PA.

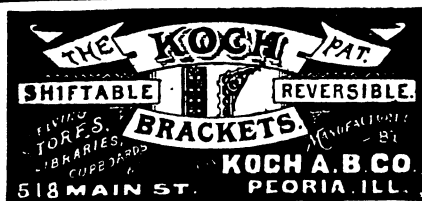


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MANUFACTURERS OF
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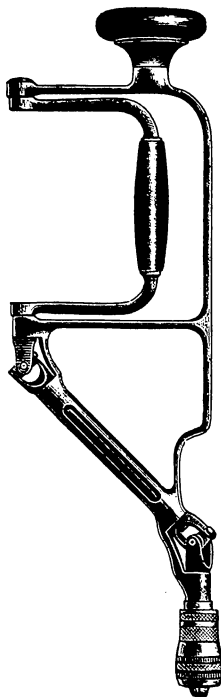
Also Cotton and Bale
Hooks.

Patented Feb. 13, 1877, a new
combination of Hooks.
456 E. HOUSTON ST.,
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THE UNIVERSAL BRACE.

Patented August 23, 1892.



Adapted to general use; also to the special use of bor-
ing and screw driving in Angles, Corners, close to Wash-
boards and Walls, and in all places difficult or impossible to
reach with the ordinary Brace.

6, 7 and 8 inch SWEEPS.

Unequaled as a Corner Brace.

The crank-arm revolves at right angles to the
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The frame is readily and firmly held in any de-
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The thrust of the tool is directly in the line of
the bit.

The operation is familiar, natural and convenient.

All parts are simple and durable

In case of damage, any part can be duplicated.

AGENCIES IN ALL THE PRINCIPAL CITIES.

The National Manufacturing Co.,

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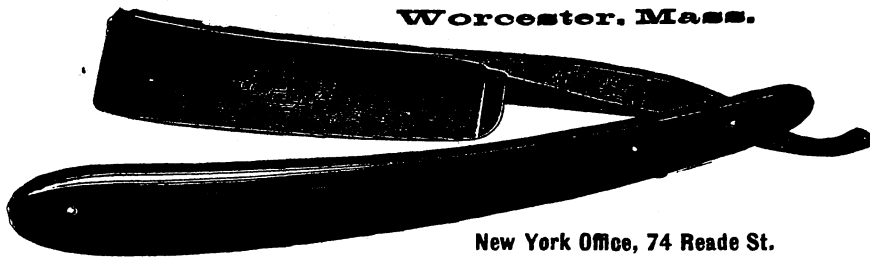
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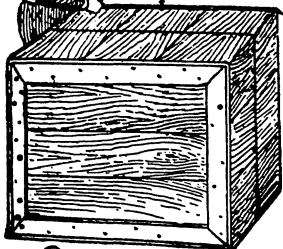
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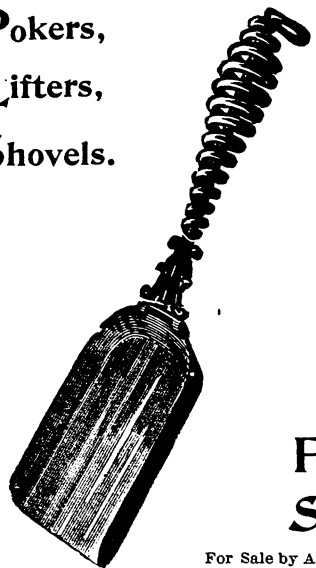
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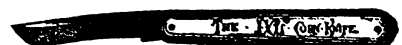
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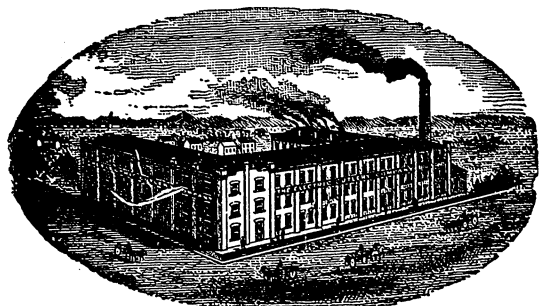
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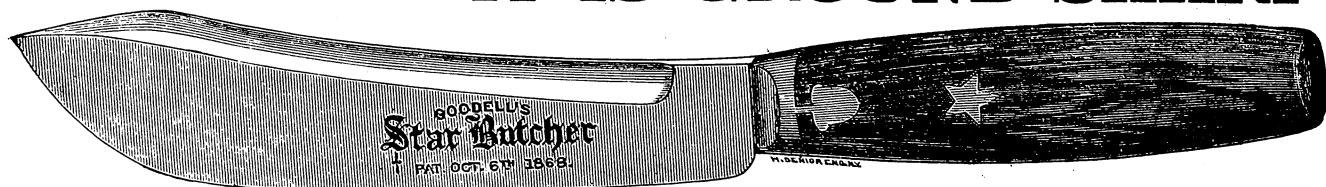
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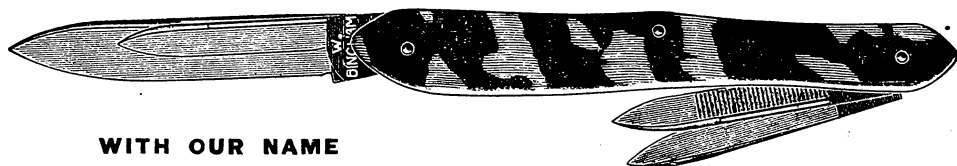
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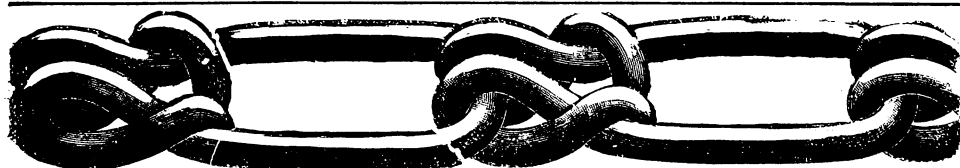
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Chain, made into Halters
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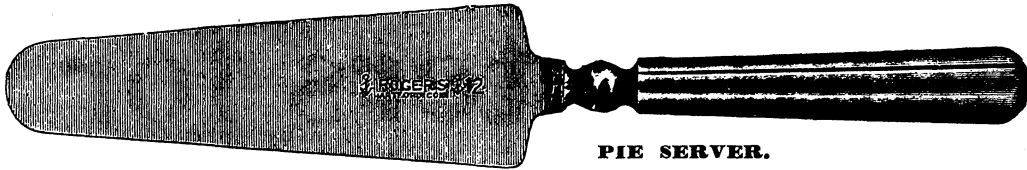
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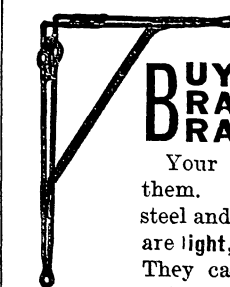
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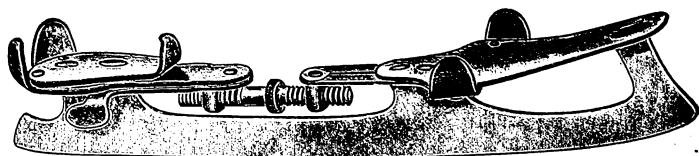
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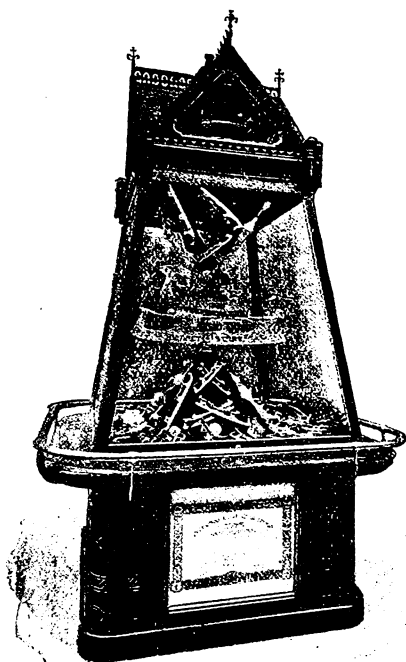
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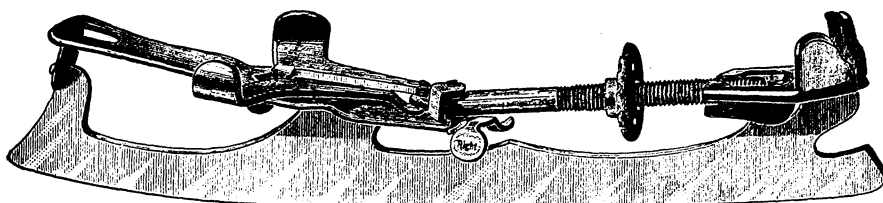
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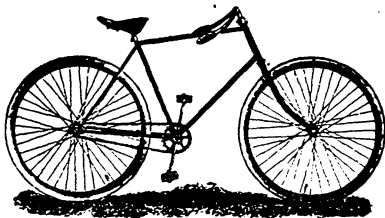


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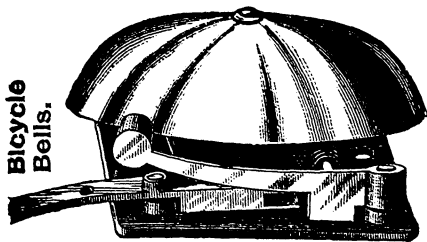
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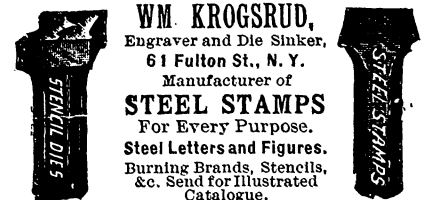


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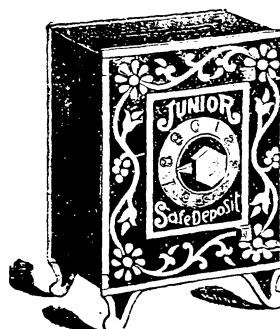
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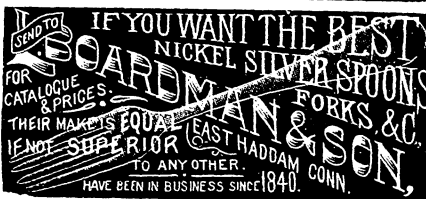
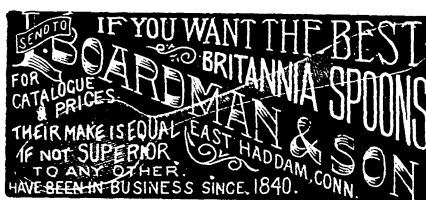
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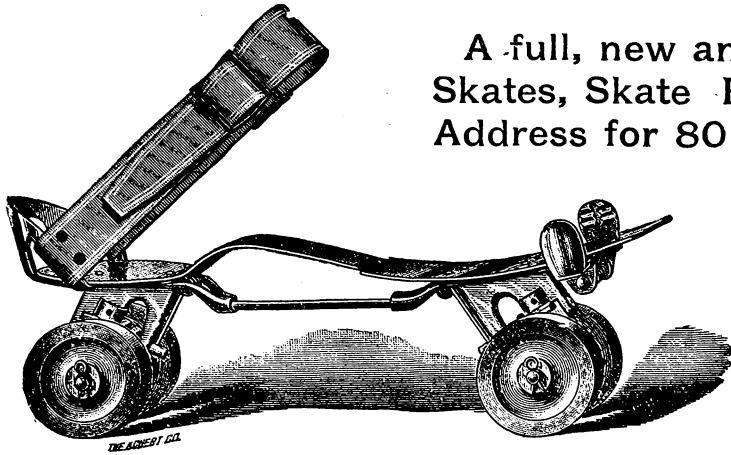
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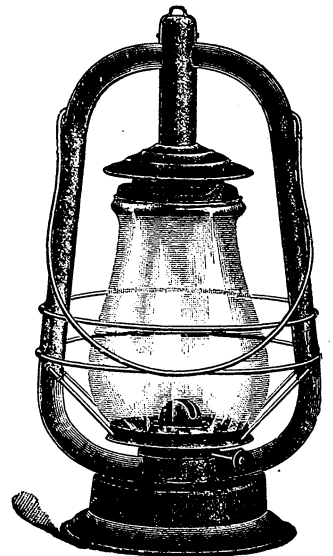


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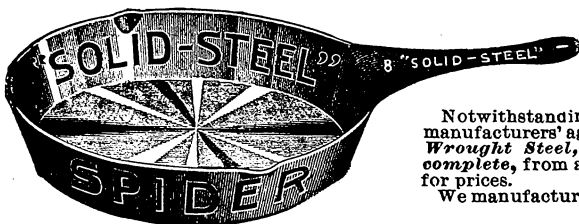
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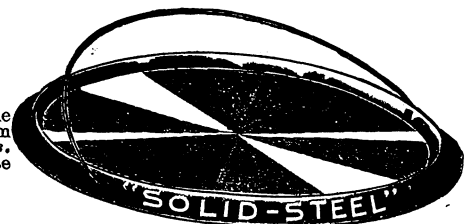
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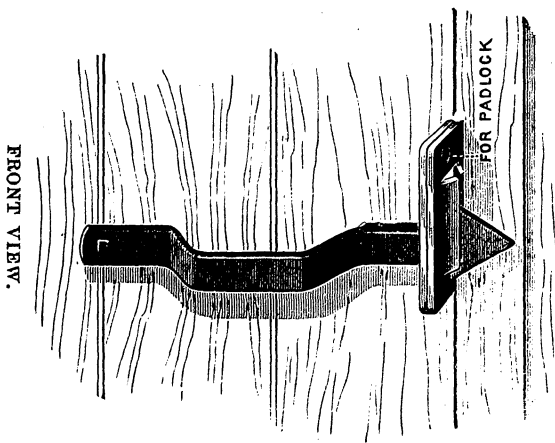
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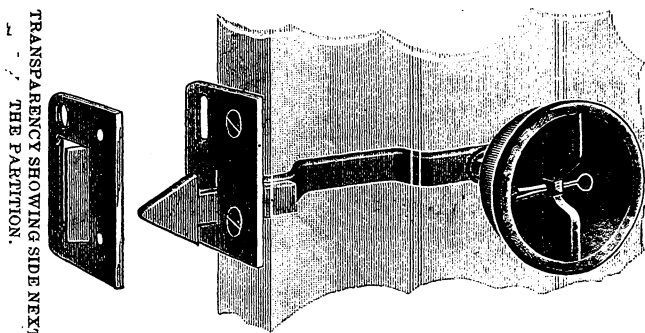
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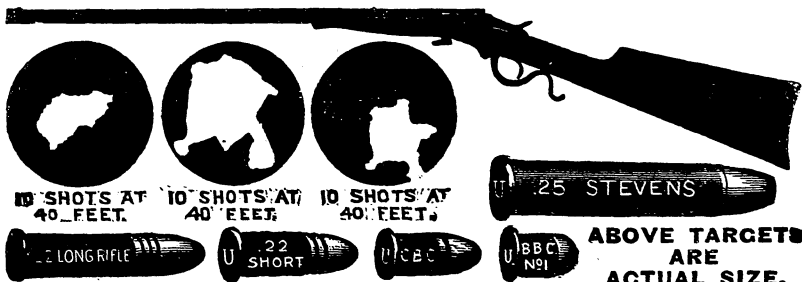
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22 LONG RIFLE 22 SHORT 22 LONG RIFLE

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ABOVE TARGETS ARE ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.

WEIGHT, 4½ POUNDS.

22-INCH BARREL.

LEVER ACTION LIKE SHARPS.

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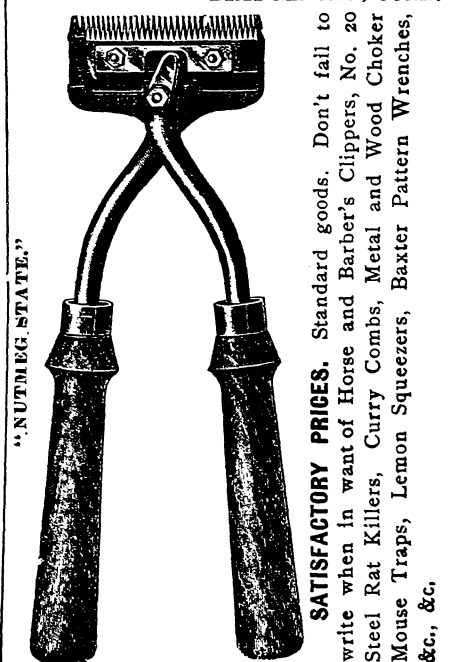
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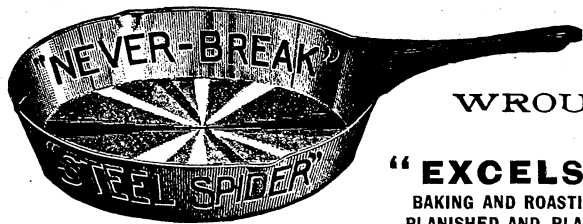
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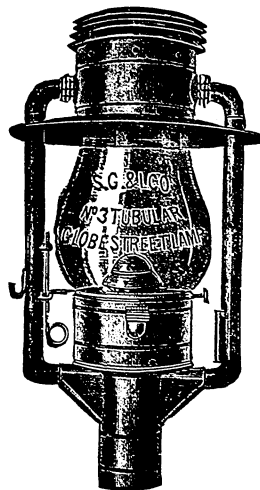
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IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
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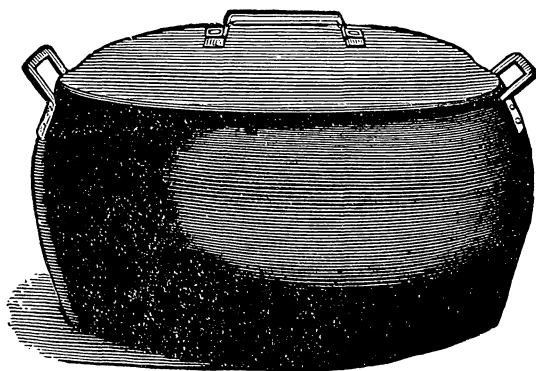
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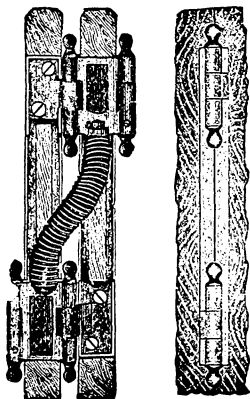
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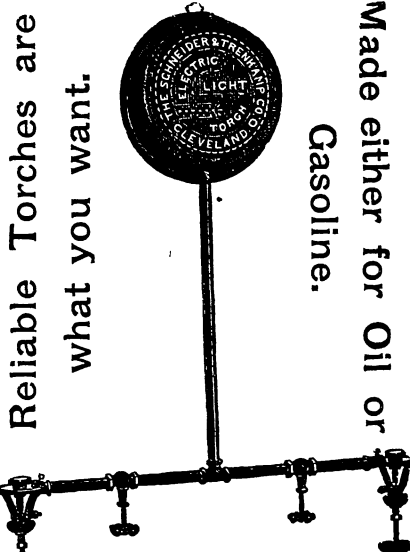
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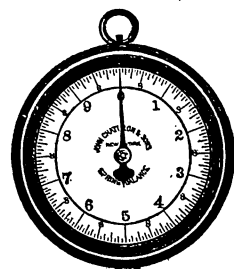
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These Torches are particularly adapted for use in
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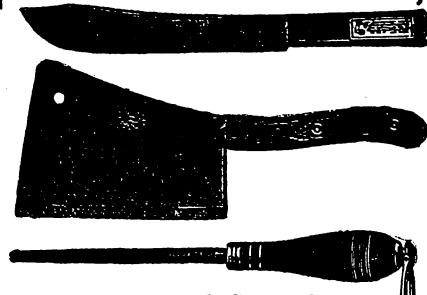


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MEAT
Choppers



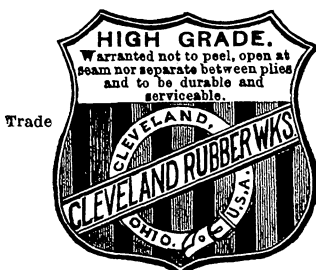
Enough
said!

SOLD BY ALL HARDWARE DEALERS. SEND FOR CATALOGUE.

Branch Office and Warehouse with J. C. McCARTY & Co., 97 Chambers Street, New York.

"SHUT DOWN! What's the Matter?" "BELT BROKE AGAIN!"

"See here, Mr. Foreman, if you don't have fewer stoppages I'll—"
"Stop, Mr. Proprietor, the fault is yours. Quit buying belts that crack, peel, open between plies, stretch and break, and I'll give you a smooth run. You think it economy to buy cheap belts from Worthless & Co. Why! the time lost and trouble and annoyance caused by shut-downs would pay the difference between good and bad belts ten times over. Why don't you buy Cleveland's 'Shield High Grade,' sold by Reliable & Co.? It has an established reputation, has been thoroughly tested, and is in use in all the large mills and elevators here. You take no chances on it. Besides, a strong warrantee is indelibly branded upon it, such as no manufacturer would dare put on a poor belt. You remember that threshing machine man, whose engine we repaired, said he had a Cleveland High Grade Belt in use over five years, and if it will stand such severe work, it certainly will ours."



Trade

Mark.

LABEL INDELIBLY STAMPED ON
EVERY 30 FEET OF BELT.

We are the only manufacturers who indelibly stamp a warrantee on each and every belt (see copy of label) and it remains as long as the belt lasts; and who give a written guarantee (see fac-simile). Our threshing machine belts have made a wonderful record, and our endless belts have given splendid service, the splice being as strong as the solid part of the belt. Suction Hose for Portable Engines and all other purposes.

We Want Your Trade.
Send for 60-page Catalog.
Write for Prices and Samples.

CLEVELAND RUBBER WORKS
OF THE MECHANICAL RUBBER CO., CLEVELAND, OHIO.

GUARANTEE.

We Guarantee our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevocable, protecting both dealer and consumer. We further guarantee that should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.

Witness our hand and seal.

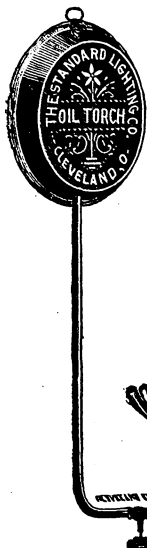


Cleveland Rubber Works

Of the Mechanical Rubber Co.

LIGHT YOUR DARK SHOPS CHEAPLY.

Give your men plenty of Light and they will do double work.



The Wall Torch has been used for several years as a means of illumination in Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops, etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the Torch in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION**, as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

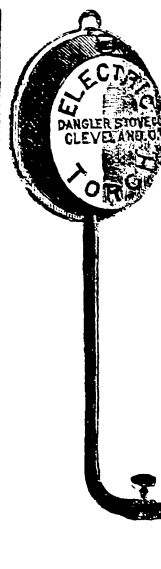
In ordering be careful to state which is desired.

Price, for Single Torch, complete, \$2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

THE STANDARD LIGHTING CO.,

100 to 118 Perkins Ave., - - - - - Cleveland, Ohio.



Dangler Electric Torches

FOR
GASOLINE
OR
OIL.

14 JETS OF LIGHT

3 to 6
INCHES
LONG.

FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas

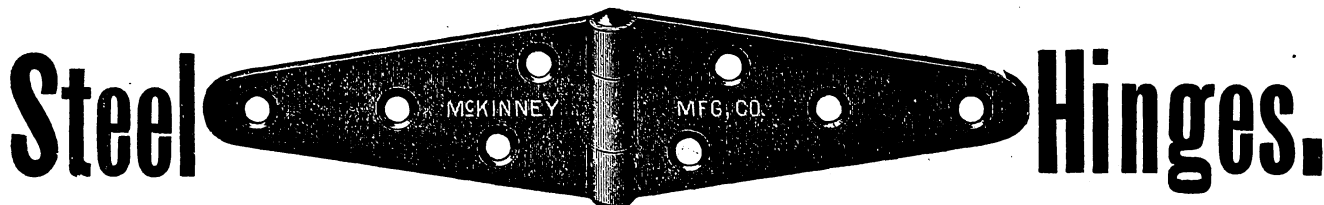
SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,
Cleveland, Ohio.

WE CLAIM

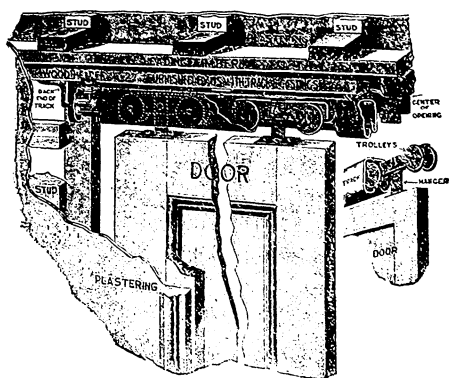
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.



SEND FOR LIST.

"NONE BETTER."



PARLOR DOOR HANGERS

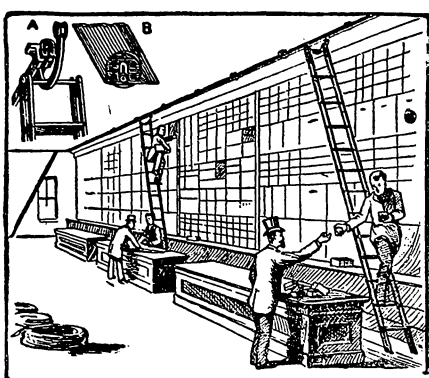
The adjustment is in the Track and not in the Hanger, as in other fixtures. Track can be taken out of Pocket and replaced without defacing walls after house is finished.

HIGHEST AWARD
AT WORLD'S FAIR 1893,

— ON —
Parlor, Barn and Fire Door Hangers.
SEND FOR CATALOGUE.

COBURN TROLLEY TRACK MFG. CO.,
HOLYOKE, MASS.

We make four styles of Rolling Ladders to reach shelving of any height.



P. & F. CORBIN,

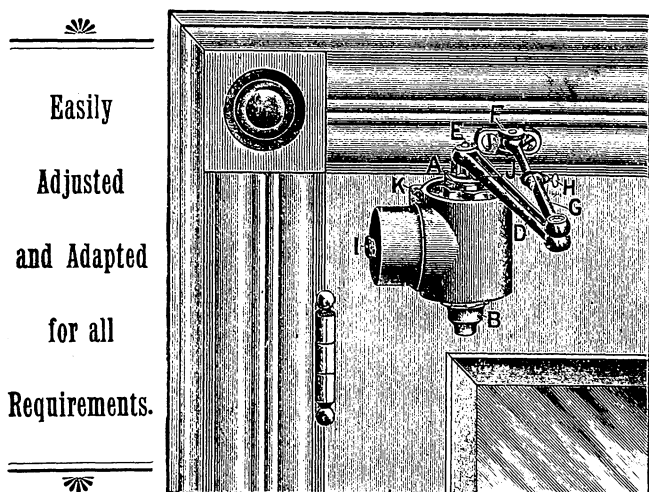
New Britain, Conn.

New York.

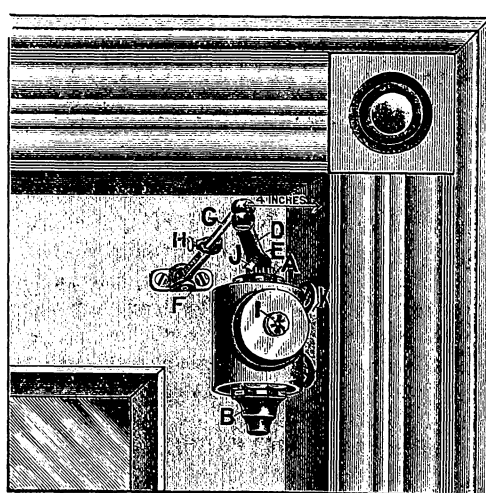
Philadelphia.

Chicago.

—) MANUFACTURERS OF (—



Easily
Adjusted
and Adapted
for all
Requirements.

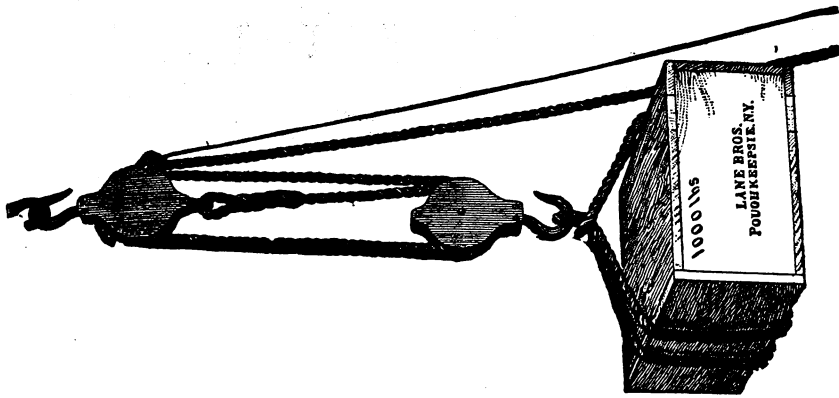


Looks Well,
Acts Well,
Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.



LANE'S SELF-LOCKING TACKLEBLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

—MANUFACTURED BY—

LANE BROS.
POUGHKEEPSIE, N. Y.

He had in his possession 55 skeleton keys
which the police claim would open any door.
—Chicago Tribune.

You are selling that kind of a lock every day and
your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue.

KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.

PATENT PERFECTION PADLOCK.

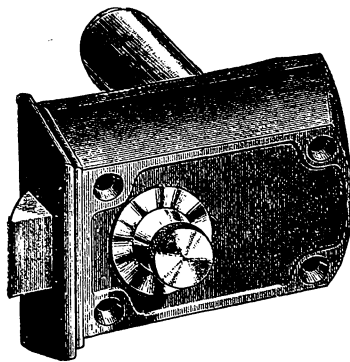
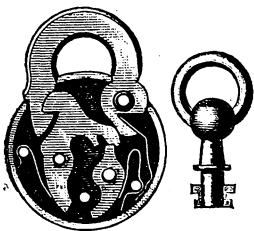
Eight Tumblers, Key Turning Both Ways.

Sizes, $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{8}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.



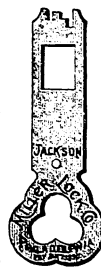
"JACKSON" NON-PICKABLE ALL BRONZE NIGHT LATCH.

Made also of JAPANNED IRON with
BRONZE BOLT and ESCUTCHEON.

Reversible. Adjustable. 3 Plated Steel
Keys. No springs, except the bolt spring.
Awarded Best Prize at World's Fair,
Chicago. Undoubtedly the best latch extant.
All are fully guaranteed. We employ no
travelers and no agents. Ask your Jobber
for our goods. Let us know if our Cat. No. 11 is not
on your file.

MILLER LOCK CO.,

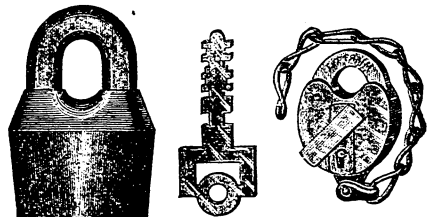
4515 Tacony Street, PHILADELPHIA, PA.



ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers
of all the leading popular styles of **PADLOCKS**,
Key-Locking Scandinavian with our patent Inter-
Locking Tumblers; the only reliable lock of this style
ever made. **SELF-LOCKING** Scandinavian of
the highest type of perfection. Dust Proof Railroad,
Freight Car and Switch Padlocks. Brass, Bronze,
Steel and Malleable Iron Padlocks for all purposes and
in all finishes. 131 different kinds. Write for our new
100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents,
97 Chambers St., NEW YORK.

**SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.**



**Cheapest and Best
Balance Made.**

WRITE FOR CATALOGUE.

The Vanderbilt Sash Balance Co.,
CANANDAIGUA, N. Y.
General Agents, Harmon & Dixon, 118 Chambers St.
New York.

SAFEST "VASSAR" LOCKS AND BEST.

—ARTISTIC BRONZE HARDWARE—

READING HARDWARE COMPANY, READING, PA.

NEW YORK.

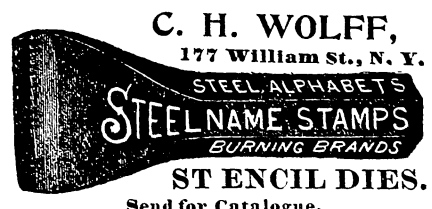
PHILADELPHIA.

CHICAGO.

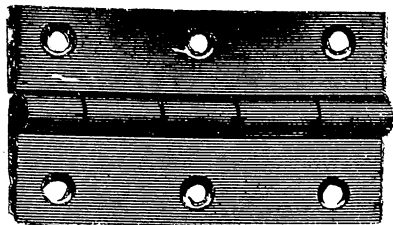
CLOTHES WRINGERS. COLBY WRINCER CO.,

MONTPELIER, VT.

HAVE YOU Our Price-List?



Send for Catalogue.



Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,
MANUFACTURERS OF

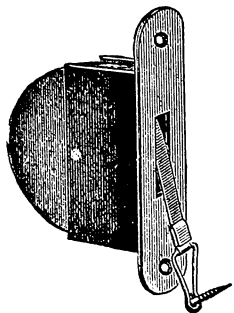
**BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.**

A Well Balanced Sash

IS LIKE,

A Well Balanced Business Man,

gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for Pullman Steel Frame Sash Balance. Warranted 15 years. Only Steel Frame Sash Balance in the world.

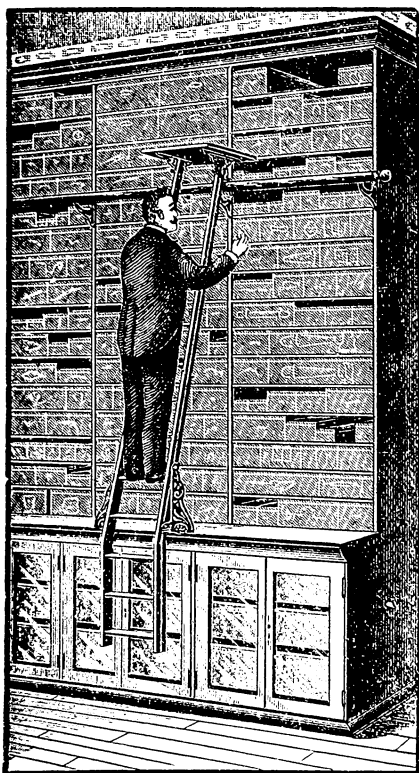


**SIMPLE, CHEAP
AND DURABLE**

PULLMAN SASH BALANCE CO., Rochester, N. Y.

New York Office, 142 Chambers St.

Chicago Office, 235 Lake St

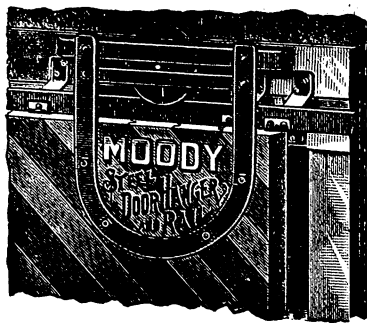


THE BICYCLE STEP LADDER.

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made. Ladders are not Suspended, but Supported from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit. Send for illustrated catalogue and prices. See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street,
Chicago, Ills.

VICTOR MFG. CO., Newburyport, Mass. STEEL RAIL.



Showing one-half set of hangers attached to door.

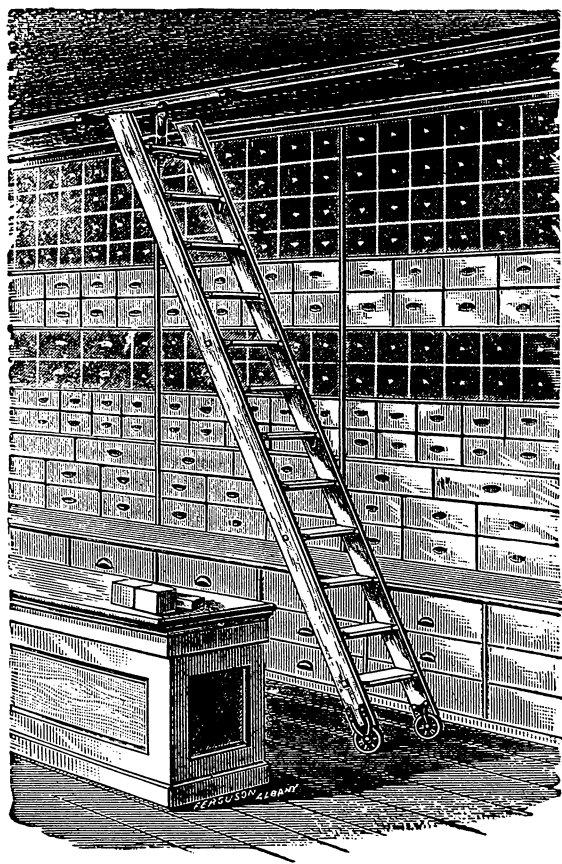


The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. pri.
No. 5, to run 6 feet, 3 1/4 in. wheel,	\$10.00
No. 6, to run 10 feet, 4 1/4 in. wheel,	15.00
No. 7, to run 15 feet, 5 1/4 in. wheel,	22.00
RAIL, per foot.....	6 1/2 cent.

THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by
M. CROISSANT,
ALBANY, N. Y.

STRAP HINGES 6, 8 and 10 Heavy.

Snap Price, 50 and 4-10%, delivered.
JAMES MANN & SONS, Buffalo, N. Y.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

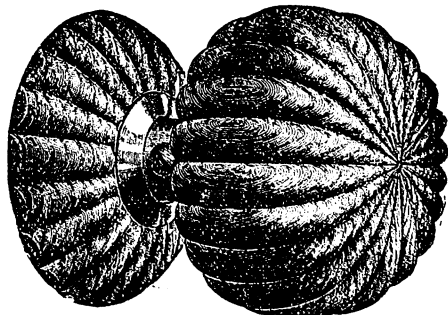
MANUFACTURED ONLY BY

"THOMAS MORTON,"

65 Elizabeth Street,

Write for Prices.

NEW YORK.

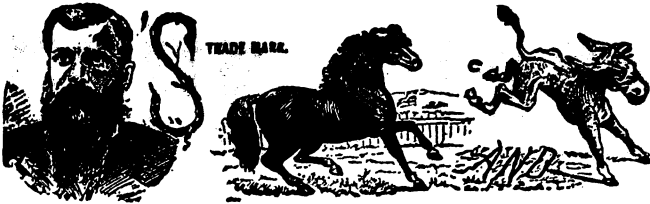


**WOOD DOOR KNOBS,
DOOR SPRINGS AND CHECKS
AND CHECKING SPRING HINGES.**

NEW GOODS. NEW PRICES.

Send for New Price-List.

J. BARDSLEY, 149 & 151 Baxter St. New York.

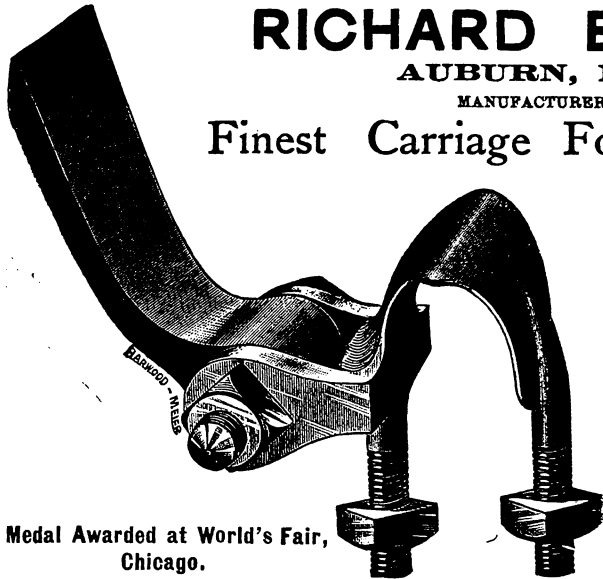


All Tags and Labels on Covert Goods bear the above Trade-Mark, and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.

COVERT MFG. CO., WEST TROY, N. Y.

RICHARD ECCLES,
AUBURN, N. Y.,
MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

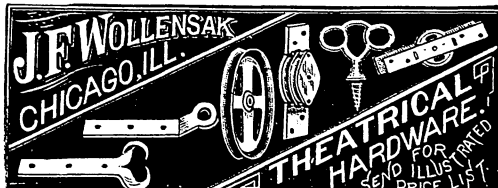
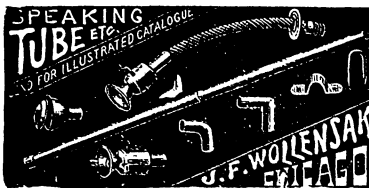
The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: Topping Brothers, 92 Chambers Street, New York
The H. Channon Co., 22 Market Street, Chicago.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.



P. J. Conroy & Co.,

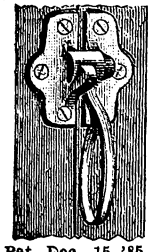
Paschall, PHILADELPHIA.

"CONROY"
Refrigerator Door

Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.



Pat. Dec. 15, '85

THE QUEEN ANNE SCREEN CO., Burlington, Vt., MANUFACTURERS OF

Improved Adjustable Window Screens.
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE BUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.

3

NICKLE, Silver and Bronze Metallic Figures and Letters, Sizes 1/2 in to 3 in. Pattern Letters, Steel Stamps, Brands, Dies &c. Send for Reduced Price List. We make a specialty of the Hardware Trade.
A. A. WHITE & CO., Providence, R.I.



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,
Boston, Mass.

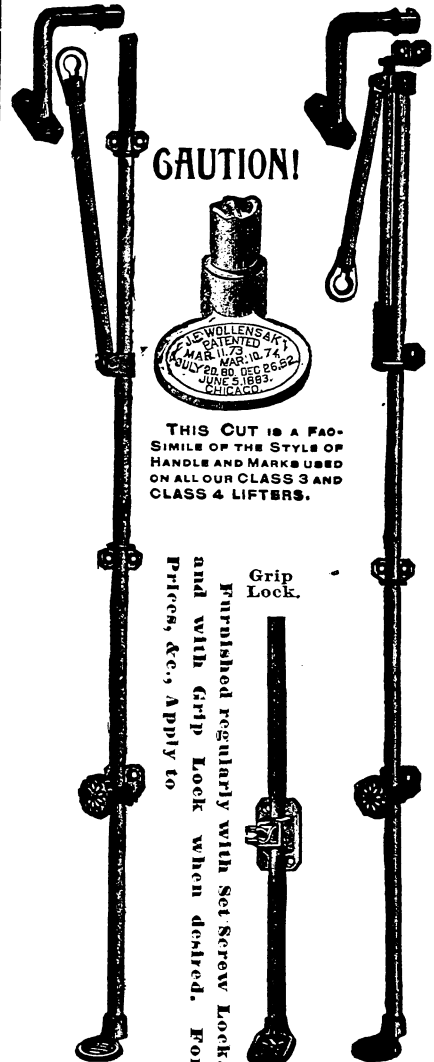
Transom...Lifters

OLD RELIABLE

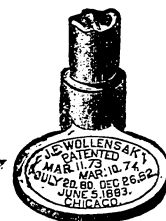
J. F. WOLLENSAK'S PATENT.

CLASS 3.

CLASS 4.



CAUTION!

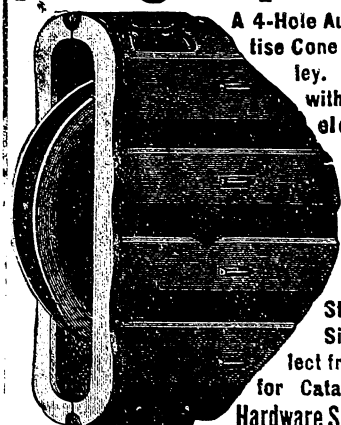


THIS CUT IS A FAO-SIMILE OF THE STYLE OF HANDLE AND MARKS USED ON ALL OUR CLASS 3 AND CLASS 4 LIFTERS.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired. For Prices, &c., Apply to

J. F. WOLLENSAK, - CHICAGO, ILL.

IDEAL SASH PULLEY.



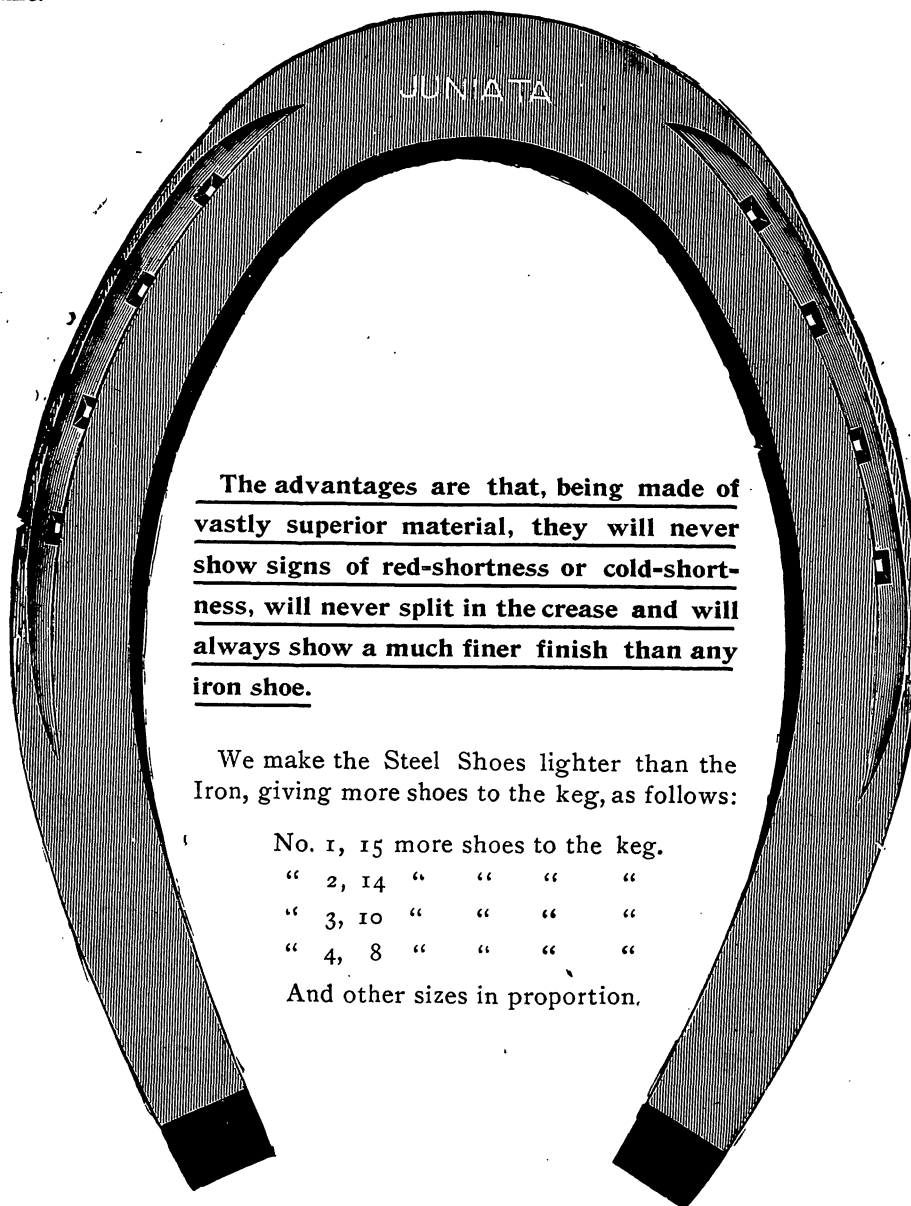
A 4-Hole Auger Mortise Cone Axle Pulley. Applied without chisel or Screws. Each Pulley its own marking gauge. A variety of Styles and Sizes to Select from. Ask for Catalogue of Hardware Specialties

STOVER MFG. CO.
145 River St., Freeport, Ill.

STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED HIND.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

SCRANTON FORGING CO.,

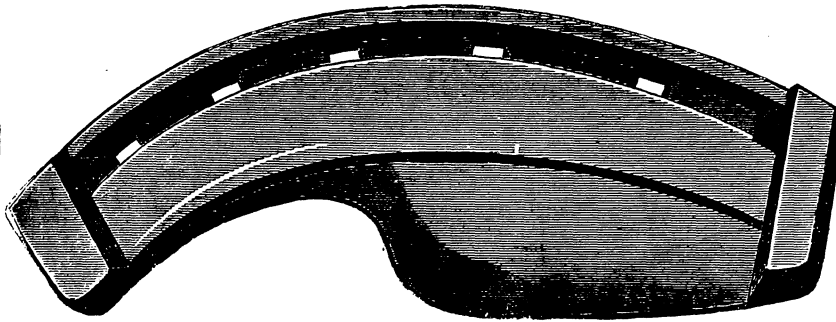
SCRANTON, PA

CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED

OX

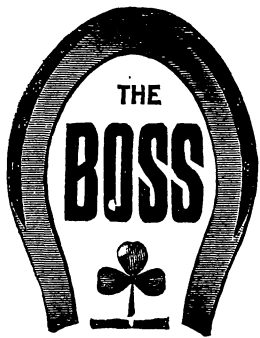
SHOES.



Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,

CATASAUQUA, PA.

RHODE ISLAND PERKINS HORSE SHOE CO.,
MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.
Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres., C. H. PERKINS, Gen. Manager, R. W. COMSTOCK, Sec'y,
CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

MANUFACTURED BY

DIAMOND STATE IRON CO.

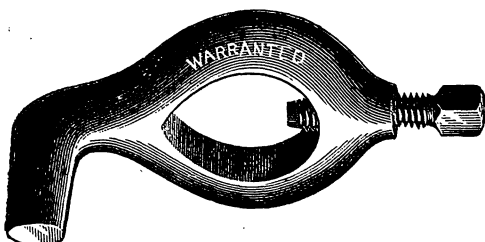
WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

PHILADELPHIA OFFICE, 206 So. Fourth St. { Correspondence invited } NEW YORK OFFICE, 11 Pine St.

LE COUNT'S HEAVY STEEL DOG,

With Steel Screws. U. S. Standard and the points hardened.



1.....	3/4.....	\$0 40	13.....	2 1/4.....	\$1 35
2.....	1.....	50	14.....	2 1/2.....	1 45
3.....	3/4.....	60	15.....	3.....	1 60
4.....	3/4.....	60	16.....	3 1/2.....	1 80
5.....	3/4.....	70	17.....	4.....	2 10
6.....	1.....	70	18.....	4 1/2.....	2 75
7.....	1 1/4.....	80	19.....	5.....	3 25
8.....	1 1/4.....	80	Full set of 19,		\$23.60.
9.....	1 1/2.....	95	20(extra) 5 1/2.....		4 00
10.....	1 1/2.....	95	21.....	6.....	5 00
11.....	1 3/4.....	1 10	22.....	7.....	6 00
12.....	2.....	1 20	23.....	8.....	7 00
One small set of 8, by 1/4 in. to 2 in.					6 25
One set of 12, by 1/4 in. to 2 in., continued by 1/2 in. to 4 in.					13 20

When ordering, state as above, whether a full set, or a set of 12, or small set of 8, is wanted.
SEND FOR CATALOGUE OF FULL LINE OF MACHINISTS' TOOLS.

C. W. LE COUNT, MANUFACTURER. SO. NORWALK, CONN., U. S. A.
These goods are for sale by CHAS. CHURCHILL & CO., Ltd., 21 Cross St., London, England.

BURDEN'S

HORSE SHOES.

"Burden Best"

Iron

Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

PHOENIX HORSE SHOES.

PHOENIX HORSE SHOE CO.,

Poughkeepsie, N. Y.

NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

LEEDS, ROBINSON & CO., General Agents,

4 Liberty Square, Boston, Mass.



— HIGHEST AWARD —

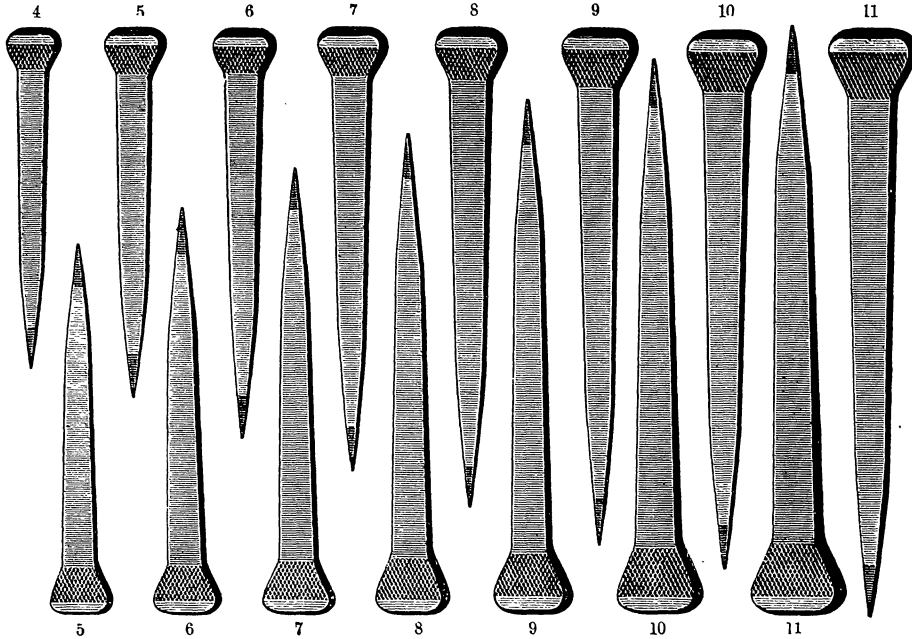
AT

WORLD'S COLUMBIAN EXHIBITION.

CAPEWELL HORSE NAILS.

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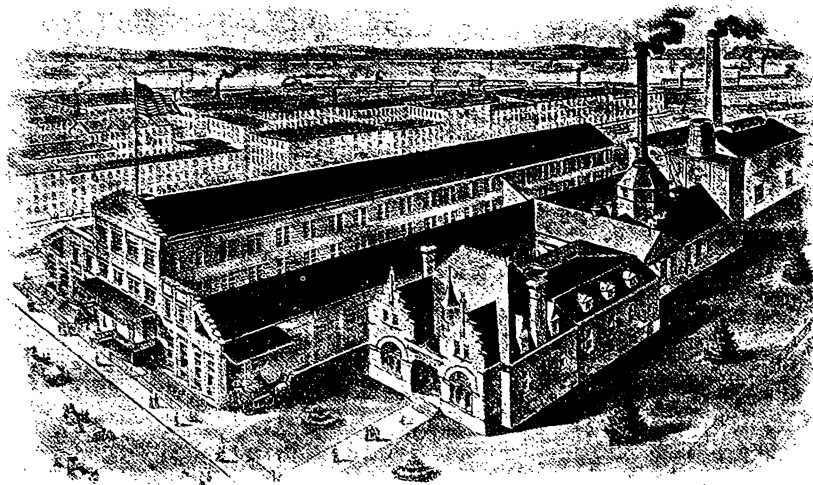
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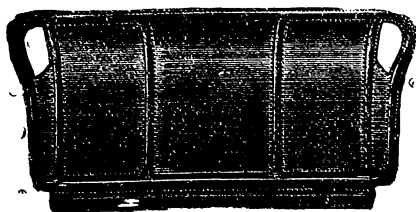
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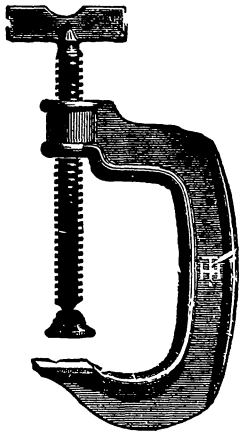
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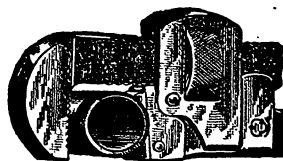
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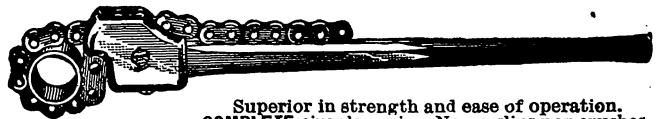
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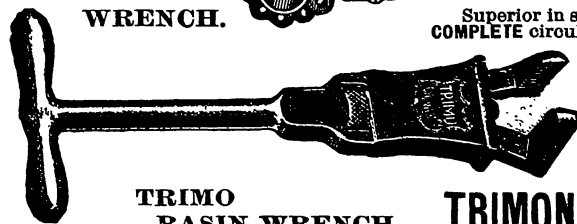
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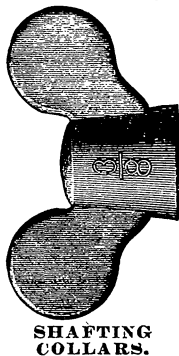


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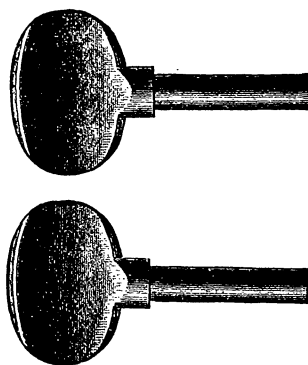
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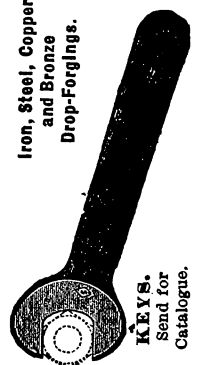
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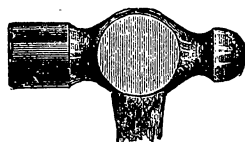
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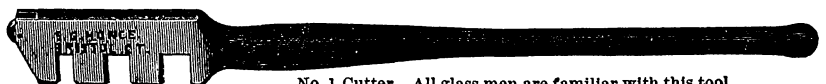
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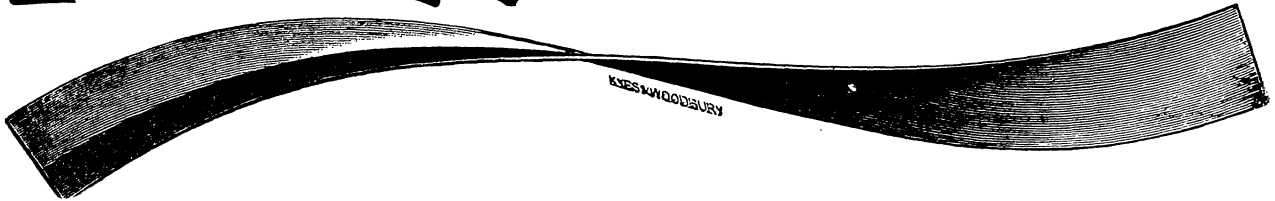
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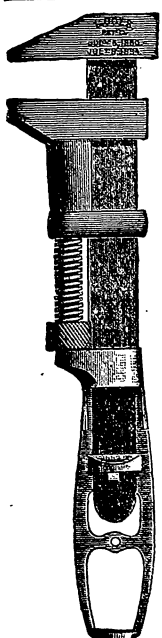


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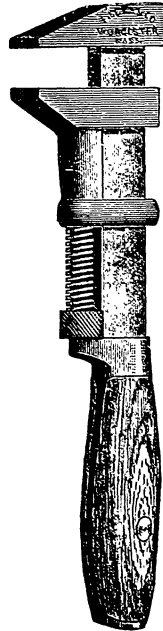


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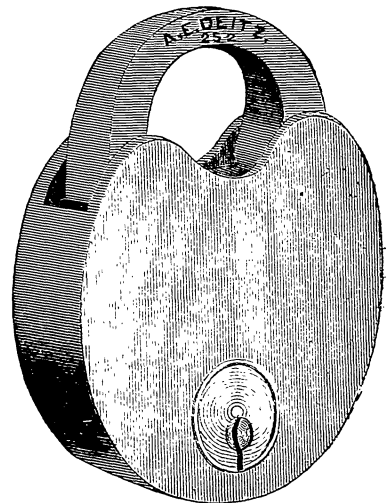
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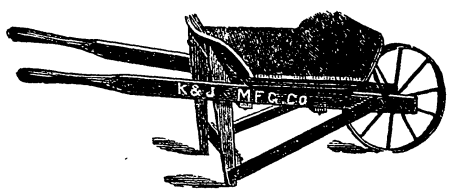
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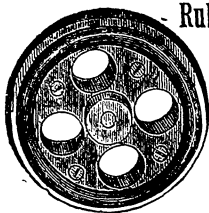


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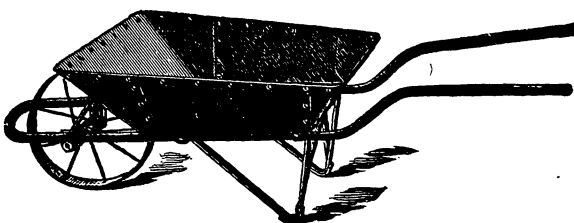
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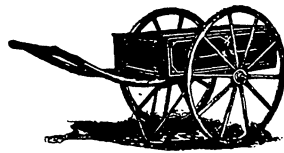
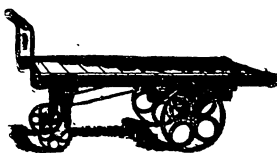
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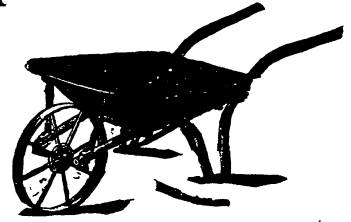
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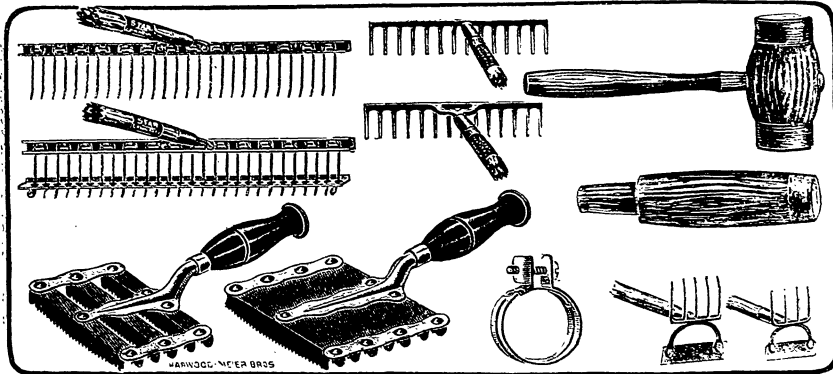
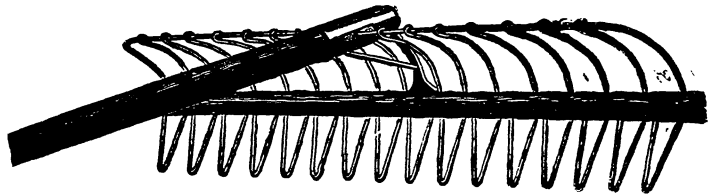
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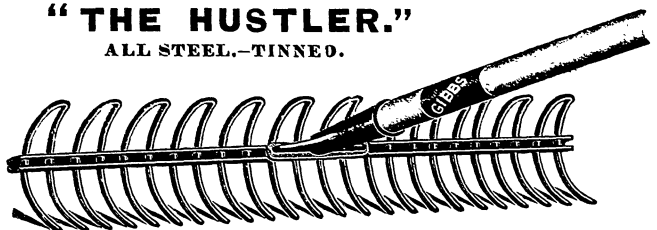
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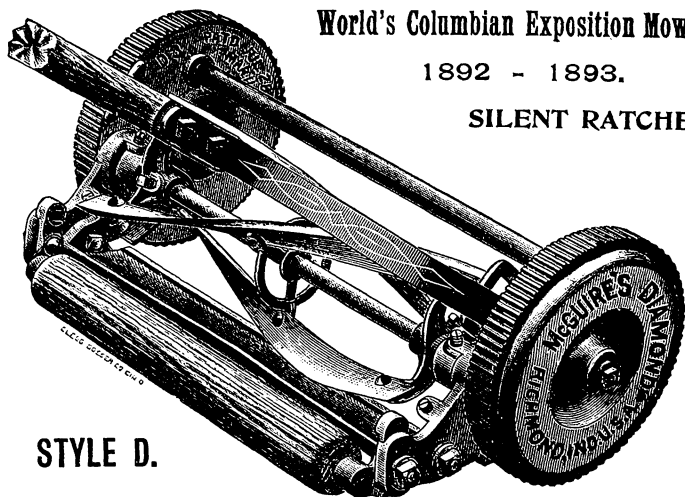
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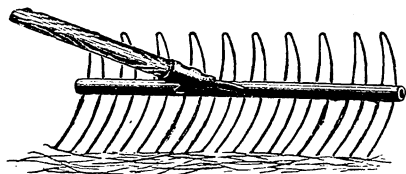
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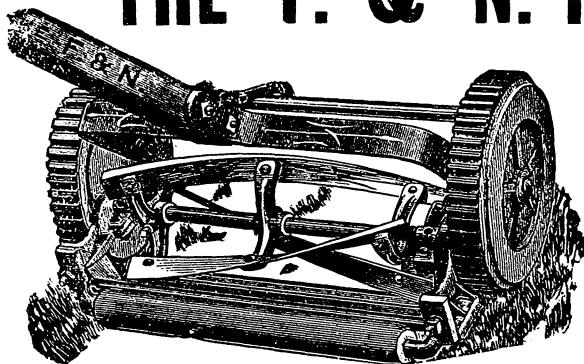
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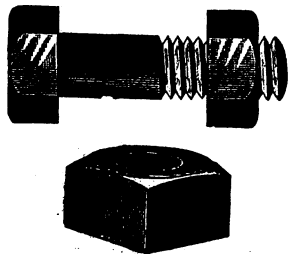
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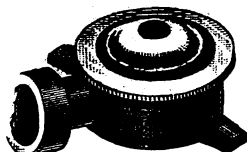


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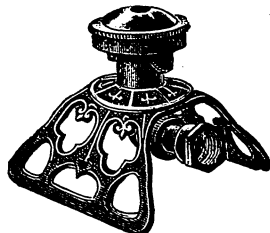
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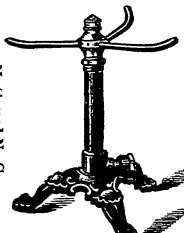


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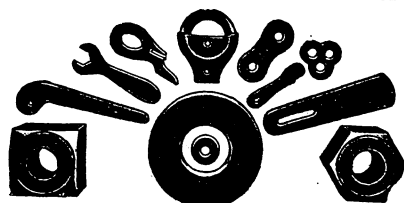
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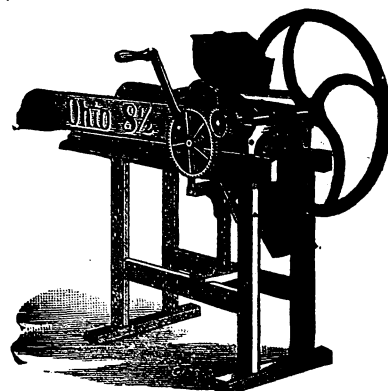
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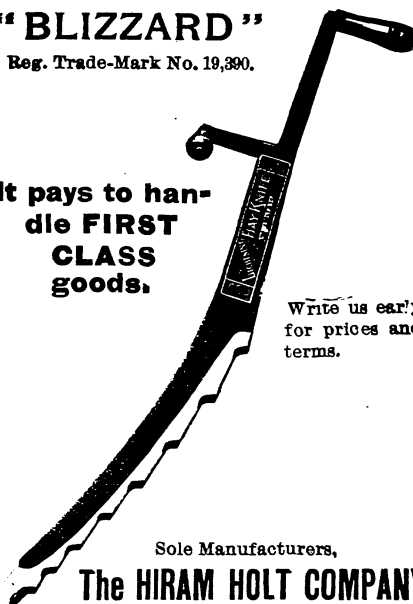
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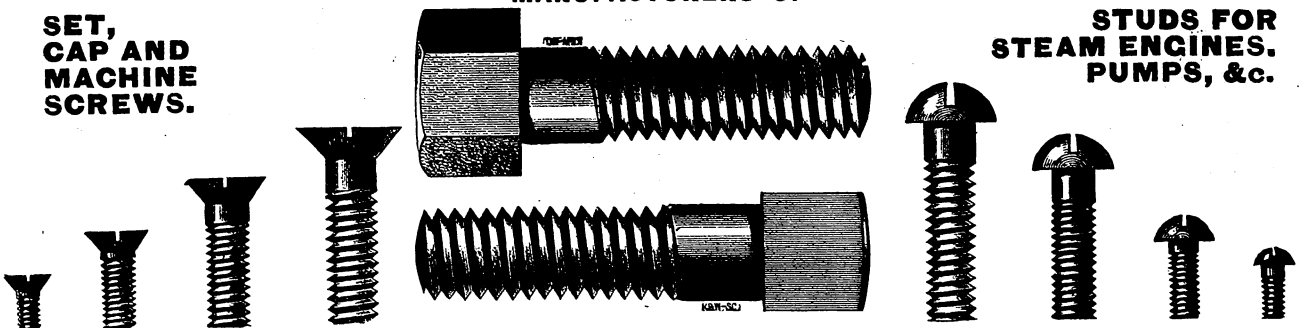
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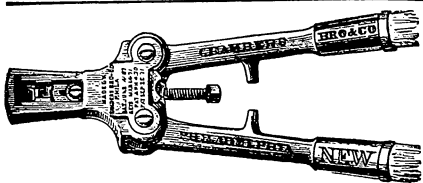
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Baeder, Adamson & Co., Phila., Pa.
- Flue Cleaners.**
Mackey, Jas. T., St. Louis, Mo.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Foreign Periodicals.**
Stechert, G. E., 810 Broadway, N. Y.
- Forges, Portable, &c.**
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foss, Mfg. Co., Springfield, Ohio.
Sturtevant, B. K. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
- Foundry Facings.**
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
- Foundry Middles.**
Estey, W. S., 65 Fulton, N. Y.
- Foundry Supplies.**
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
- Friction Clutches.**
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.
- Friction Cone.**
Evans Friction Cone Co., Boston, Mass.
- Fruit Presses.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Furnaces, Foundry.**
Byram & Co., Detroit, Mich.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**
Pancoast, Henry B. & Co., Phila., Pa.
- Gauge, Rolling Mill.**
Haines Gauge Co., Philadelphia, Pa.
- Gear Cutters.**
D. E. Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works, Boston, Mass.
Hoole, Robt. & Son Co., Baltimore, Md.
- Glass Boards.**
Canton Saw Co., Canton, O.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Glass Tubes.**
Ascheroff Mfg. Co., 111 Liberty St., N. Y.
- Glue.**
Baeder, Adamson & Co., Phila., Pa.
Russell Cement Co., Gloucester, Mass.
- Grass Catchers.**
Supplee Hardware Co., Phila., Pa.
- Grass Hooks.**
Bruce & Marks Mfg. Co., Gas City, Ind.
- Grinding Mills.**
Foss Mfg. Co., Springfield, O.
- Grinding and Polishing Machines.**
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stone Co., Cleveland, O.
- Grapewine, Makers of.**
Lafin & Rand Powder Co., 29 Murray St., N. Y.
- Hand Carts.**
Lansing Wheelbarrow Co., Lansing, Mich.
- Handles.**
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.
- Hangers, Door.**
Chicago Spring Butt Co., Chicago, Ill.
Corburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
- Hardware Comm'n Merchants.**
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**
Hotchkiss, E. S., Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs. Agents.**
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers, N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co., New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila., Pa.
Hart, H. C. Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knap & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Welland, Chas., 149 Chambers St., N. Y.
Wilson, J. Fred, Worcester, Mass.
- Hardware, Yacht and Ship.**
Ferdinand, L. W. & Co., Boston, Mass.
- Harness Snaps.**
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hay Knives.**
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.
- Hoisting Machines.**
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. & Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beckley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.
- Hollow Ware, Aluminum.**
Illinois Pure Aluminum Co., Lemont, Ill.
- Horse and Barbers' Clippers.**
Hotchkiss, E. S., Bridgeport, Conn.
- Horse Nails, Makers of.**
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes. Makers of.**
Bryden Horse Shoe Co., Catsaqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.
- Hose.**
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 16 Park Row, N. Y.
- Hydrants, &c.**
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Jacks.**
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.
- Ice-Cream Freezers.**
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.
- Ice Shavers.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Injectors.**
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**
Corning, Edw. & Co., 39 B'way, N. Y.
Ootton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 480 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.
- Iron Ore.**
Naylor & Co., 45 Wall, N. Y.
Pulman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**
Barnes, O. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning & Wallace, 85 Elm St., N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 448 West St., N. Y.
Naylor & Co., 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St., N. Y.
Piercion & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, A. H. & Co., Philadelphia.
- Iron, Importers.**
Abbott Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron, Sheet. Manufacturers of.**
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mass. Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Ladders, Rolling.**
Corburn Trolley Track Mfg. Co., Holyoke, Mass.
- Ladies.**
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lamp Stoves.**
Glazier Stove Co., Chelsea, Mich.
- Lamps.**
Standard Lighting Co., Cleveland, O.
- Lanterns.**
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Lawn Mowers.**
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mass. Foss & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila., Pa.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse, N. Y.
- Lawn Sprinklers.**
Ette & Henger Mfg. Co., St. Louis.
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.
- Leather Pasts.**
Greene, J. Frank & Co., 27d Water St. New York.
- Lemon Squeezers.**
Ripley Mfg. Co., Unionville, Conn.
- Letters and Figures, Metallic.**
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Davis & Cook, Watertown, N. Y.
Richardson, C. F. & Son, Athol, Mass.
- Locks & Knobs, Manufacturers of.**
Deits, A. E., 97 Chambers, N. Y.
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.

Machinery.

Am. Tool Works, Cleveland, Ohio.
 Barnes, W. F. & John, Rockford, Ill.
 Bement, Miles & Co., Philadelphia, Pa.
 Bigelow, C. E., 45 Day, N. Y.
 Bignall & Keeler Mfg. Co., St. Louis.
 Birmingham Iron Foundry, Birmingham, Conn.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Bogert, Jno. L., Flushing, N. Y.
 Briggs, Marvin, 12 Broadway, N. Y.
 Carlin's Sons, Thos., Allegheny, Pa.
 Cinn. Milling Mch. Co., Cincinnati, Ohio.
 Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
 Coulter & McKensie Mch. Co., Bridgeport, Conn.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Fitchburg Mch. Works, Fitchburg, Mass.
 Garvin Mch. Co., Laight & Canal Sts.
 Gould & Eberhardt, Newark, N. J.
 Hamilton Mch. Tool Co., Hamilton, O.
 Harrington, E. Son & Co., Phila., Pa.
 Henderson, A. L., Wilmington, Del.
 Hendoy Machine Co., Torrington, Ct.
 Hill, Clarke & Co., Boston, Mass.
 Johnson, Israel H., Jr., & Co., Phila.
 Jones & Lamson Mch. Co., Springfield, Vt.
 Lovegrove & Co., Philadelphia, Pa.
 McCabe, J. J., 68 Cortlandt, N. Y.
 Mechanists Supply Co., Rochester, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Conn.
 Newark Mch. Tool Works, Newark, N. J.
 New Haven Mfg. Co., New Haven, Conn.
 New York Mach'ry Depot, N. Y.
 Niles Tool Wks., 138 Liberty St., N. Y.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
 Place, Geo., 12 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mch'ry Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons L. T., Philadelphia, Pa.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Chester, Pa.
 Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.

Adt. Jno. & Son, New Haven, Conn.

Machine Knives.

Loring Coes & Co., Worcester, Mass.

Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—See Machinery.**Machine Work.**

Papping, J., 58th St., & 11th Ave., N. Y. City.

Machinists' Scales.

Coffin & Leighton, Syracuse, N. Y.

Starrett, L. S., Athol, Mass.

Valentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.

King, J. M. & Co., Waterford, N. Y.

Sellers, Wm. & Co., Inc., Phila.

Mallets.

N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.

Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.

Kuffel & Esser Co., 127 Fulton St., N. Y.

Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.

Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.

Correspondence School of Mechanics, Scranton, Pa.

Metals.

Fearing, Wm. S., 100 Chambers, N. Y.

Hendricks Bros., 49 Cliff, N. Y.

Naylor & Co., 45 Wall, N. Y.

Metal Brokers.

American Metal Co., N. Y.

Metalburgists.

Britton J. Blodgett, Phila.

Milling Machines.

Cin. Milling Mch. Co., Cincinnati, Ohio.

Mining Knives.

Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.

Darby, Edw. & Sons, Phila., Pa.

Leonard, B. E., Scranton, Pa.

Mining Screens.

Harrington & King Perforating Co., Chicago, Ill.

Howard & Morse, 45 Fulton, N. Y.

Mirrors.

Rice, C. F., Chicago, Ill.

Models, Makers of.

Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.

Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.

C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.

Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.

Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.

Borden & Lovell, 70 West, N. Y.

Cumberland Nail & Iron Co., Phila.

Oxford Iron Co., 81 Washington, Pottstown, Pa.

Pottstown Iron Co., Pottstown, Pa.

Riverside Iron Wks., Wheeling, W. Va.

Nail Yokes.

Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.

Colburn Electric Mfg. Co., Fitchburg, Mass.
 Eddy Electric Mfg. Co., Windsor, Conn.
 Zuckner & Levent Chemical Company, 10 to 14 Grand St., N. Y.

Notway Shapes, Rollers of.

Berward, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.

Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.

Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., Makers of.

American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Port Chester Bolt and Nut Co., Port Chester, N. Y.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sauerberg, J. H. & Son, Reading, Pa.
 Wilson, J. Fred, Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.

Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.

Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.

Glazier Stove Co., Chelsea, Mich.

Ores.

Wister, Francis, Philadelphia, Pa.

Or Shoes.

Scranton Forging Co., Scranton, Pa.

Packing.

Morrison, Robt., St. Louis, Mo.

N. Y. Belting & Packing Co. Ltd., N. Y.

Padlocks.

Ames Sword Co., Chicopee, Mass.

Frahm, E. T., Lancaster, Pa.

Hillebrand & Wolf, Phila., Pa.

Miller Lock Co., Philadelphia, Pa.

Paint.

Dixon, Jos. Crucible Co., Jersey City, N. J.

Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.

Dangler Stove & Mfg. Co., Cleveland, O.

Paint Cans.

Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.

Howson & Rowson, Phila. & Wash'ton.

Jenner, H. W. T., Washington, D. C.

Stocking, E. B., Washington, D. C.

Perforated Metal.

Clinton Wire Cloth Co., Clinton, Mass.

Harrington & King Perforating Co., Chicago, Ill.

Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.

Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.

Crescent Phosphorized Metal Co., Philadelphia, Pa.

Crosby Steam Gate & Valve Co., Boston, Mass.

Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.

Plumbo, Fayette R., Philadelphia, Pa.

Pig Iron.

Houston, C. B. & Co., Philadelphia, Pa.

Montour Iron & Steel Co., Danville, Pa.

Naylor & Co., 45 Wall, N. Y.

Pilling & Crane, Philadelphia, Pa.

Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.

Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.

Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.

National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.

Signal & Keeler Mfg. Co., St. Louis, Mo.

Merrill Mfg. Co., Toledo, O.

Panocast Henry B. & Co., Philadelphia.

Saunders Sons, D., Yonkers, N. Y.

Pipe Grips.

Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., Makers of.

McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, Makers of.

Cumberland Nail & Iron Co., Phila., Pa.

Donalson Iron Co., Emmaus, Pa.

Riverside Iron Works, Wheeling, W. Va.

Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, Manufacturers of.

Brook Bros., Millbury, Mass.

Planes, Manufacturers of.

Stanley Rule & Level Co., N. Y.

Plate Bending Rolls.

Schneekloth, H. A., 530 W. 28th St., N. Y.

Plate, Iron and Steel, Mfrs of.

Etna-Standard Iron & Steel Co., Bridgeport, Conn.

Lukens Iron & Steel Co., Coatesville, Pa.

Mahoning Valley Iron Co., Youngstown, Ohio.

McNease, McLean Co., Pittsburgh, Pa.
 McNeill & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wellman Iron & Steel Co., Thurlow, Pa.
 Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.

Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.

Troy Nickel Works, Troy, N. Y.

Polishing Machines.

Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.

La Massena, C. E. & Co., Newark, N. J.

Post Hole Diggers.

Gibbs Mfg. Co., Canton, Ohio.

Wister, L. & B. & Co., Philadelphia, Pa.

Poultry Nettings.

Barum, E. T., Detroit, Mich.

Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.

N. Y. Wire Cloth Co., Trenton, N. J.

"Silver Finish."

Tyler Wire Wks. Co., W. S., Cleveland, O.

Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.

Laslin & Rand Powder Co., 29 Murray

New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.

Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.

Belden Mach. Co., New Haven, Conn.

Demelt & Eisenhardt, Philadelphia.

Jenkins & Lingie, Bellefonte, Pa.

Presses, Dies, &c.

E. W. Bliss Co., Brooklyn, N. Y.

Crosby, G. A. & Co., Chicago, Ill.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Waterbury Mch. Co., Waterbury, Conn.

Presses, Power, Makers of.

Bliss, E. W. Co., Brooklyn, N. Y.

Manville, E. J. Mch. Co., Waterbury, Ct.

Merriman, A. H., Meriden.

Stark Mch. & Tool Co., Buffalo, N. Y.

Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.

Keystone Clutch Mch. Wks., Phila., Pa.

Lake, J. H. & D. Co., Massillon, Ohio.

Pulverizing Mill.

Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.

Coulter & McKenzie Mch. Co., Bridgeport, Conn.

Dean Bros. Steam Pump Works, Indianapolis, Ind.

Hooker-Corville Steam Pump Co., Chicago, Ill.

McGowan, J. H. & Co., Cincinnati, O.

Maxlin, J. & Son, Jersey City, N. J.

Norwalk Iron Wks. Co., So. Norwalk, Conn.

Southwark Fdy. & Mch. Co., Phila., Pa.

Valley Pump Wks., Easthampton, Mass.

Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, Makers of.

Bellevue Pump Co., Bellevue, Iowa.

Deming Co., Salem, O.

Douglas, W. & B., Middletown, Conn.

East, Foss & Co., Springfield, O.

Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.

E. W. Bliss Co., Brooklyn, N. Y.

Cockburn Barrow & Mch. Co., Jersey City, N. J.

Crosby, G. A. & Co., Chicago, Ill.

Henderson, A. L., Wilmington, Del.

Schneekloth, H. A., 530 W. 28th St., N. Y.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.

Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.

Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.

Burditt & Williams, Boston, Mass.

Miley, W. S., 65 Fulton, N. Y.

Ripley Mfg. Co., Unionville, Conn.

Razors.

Electric Cutlery Co., 113 Chambers, N. Y.

J. & Torrey Razor Co., Worcester, Mass.

Reels.

Hendryx, A. B. Co., New Haven, Conn.

Refrigerator Door Fasteners.

Conroy, P. J. & Co., Philadelphia.

Rivets.

Blake & Johnson, Waterbury, Conn.

Boyce Rivet Co., Muncie, Ind.

Burden Iron Co., Troy, N. Y.

Cobb & Drew, Plymouth, Mass.

Allentown Rolling Mill. Allentown, Pa.
Lookhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, Manufacturers of.
Etna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chees Bros., Pittsburgh, Pa.
Maioning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pa.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., La., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Mathlessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch, A. B. & Co., Peoria, Ill.

Slaks.
Douglas, W. & B., Middletown, Conn.

Skates, Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Skates, Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C. Richmond, Ind.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Fat. Articles.
Konigsow, O., Cleveland, O.

Speed Indicators.
Church & Slight, 103 Fulton St., N. Y.

Spelter.
Mathlessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y.

Springs.
Cary, Alanson, 240-242 W. 29th St., N.Y.
Dunbar Bros., Bristol, Conn.
Killer & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co., Chicago, Ill.
Fullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St., New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co., Binghamton, N.Y.

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y.
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, & Co., Masters of.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St. N. Y.
Harrison Safety Boiler Wks., Phila. Pa.

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Steel Figures and Alphabets.
Kressrud, W., 61 Fulton, N. Y.
Wolf, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Etna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 108 Duane St. Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department or Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co., High Bridge, N.J.
Wordlaw, S. & Co., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Steel, Manufacturers' Agents.
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 B'way, N. Y.
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, Manufacturers of.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, Eng.
Land, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y.

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Strops.
Electric Cutlery Co., 113 Chambers, N.Y.
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Mathlessen & Hegeler Zinc Co., La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland, O.
Phillips, E. & Sons, South Hanover, Mass.
Trafant, W. E., Whitman, Mass.

Tank Heaters.
Hunt, Helm & Ferris, Harvard, Ill.

Taps and Dies.
Eutterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass.

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 98 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, New York.
Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.

Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Danzler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, O.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F., Chicago, Ill.

Trucks, Manufacturers of.
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leag's John, Son & Co., 4 Fletcher St., New York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills, Makers of.
Cleveland Twist Drill Co., Cleveland, O.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland, O.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 66 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 98 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass.
and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weather Strips.
Thomas, Jno. H. Mfg. Co., Piqua, Ohio.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.

Cookburn Barrow & Moh. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.

Whips.
American Whip Co., Westfield, Mass.

Window Cord, Makers of.
Samson Cordage Works, Boston, Mass.

Wire, Manufacturers of.
Consolidated Steel & Wire Co., St. Louis, Mo.
Cable Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Vt.
Wetherell Bros., 93 Liberty St., N. Y.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Dray, Edward & Sons, Philadelphia, Pa.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks., Milwaukee, Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleveland, O.

Wire Cutters.
Higginum Hdw. Co., Higginum, Conn.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.

Wire Fences.—See Fencing, Iron and Wire.

Wire Goods, Manufacturers of.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwalk, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. F. Wire Novelty Co., Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, E. & Sons, South Hanover, Mass.
Phillips, Townsend & Co., Phila., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. H. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel Makers.
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco, Cal.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y.

Wrenches, Manufacturers of.
Bemis & Call Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Capitol Mfg. Co., Chicago, Ill.
Cox Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
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Briggs, Marvin.	51	Coulter & McKenzie Machine Co.	40	Goubert Mfg. Co.	76	Knapp & Cowles Mfg. Co.	69
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Bryden Horse Shoe Co.	81	Crosby, G. A. & Co.	39	Halk & Naumann.	3	Lansing Wheelbarrow Co.	86
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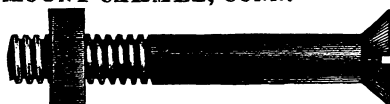
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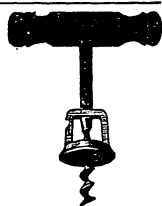
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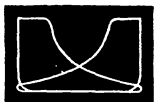
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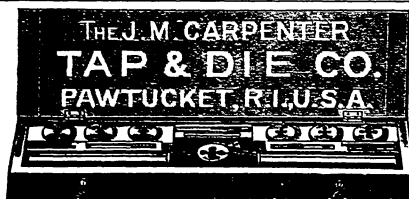
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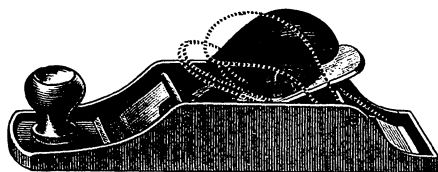


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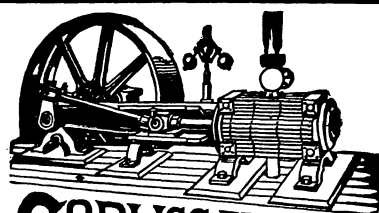
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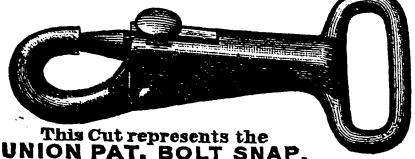
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THE IRON AGE

THURSDAY, NOVEMBER 23, 1893.

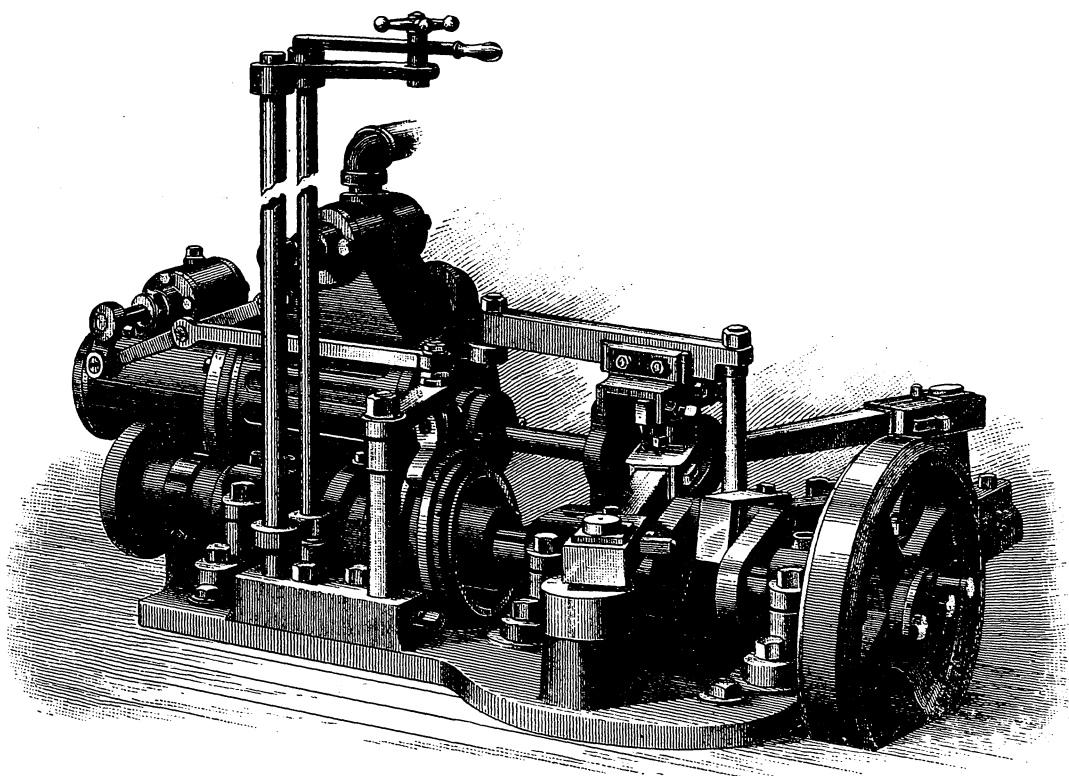
The Smoke Nuisance in Massachusetts.

The last Legislature of Massachusetts passed a law regulating the smoke nuisance in the large cities. This law provided that in cities of over 300,000 inhabitants, after July 1 of the present year, no person should "use bituminous coal for the purpose of making steam in boilers in any building, unless the furnace in which said coal is burned is so built or equipped that at least 75 per cent. of the smoke is consumed or

boilers, their number and size, as well as horse-power, the area of heating surface and of chimney and smoke flues, the daily amount of coal burned and the number of hours in use of boiler, summer and winter, and any devices for smoke consumption in use or contemplated. Naturally such an investigation, if properly conducted, could not be finished in one week or two weeks, and it has occupied nearly two months or more; but, as a result, a large amount of reliable information has been collected, and the superintendent will soon be in a position to

A Yacht Engine of New Design.

All the main features of a yacht engine designed by C. F. Littlejohn of Bridgeport, Conn., are illustrated by the accompanying engravings. It may be said to be a wide departure from the usual forms or types of marine engines now in service. The engine is a compound tandem having a high pressure cylinder $3\frac{1}{4}$ inches in diameter, a low pressure 6 inches in diameter, and a stroke of 6 inches, and drives a propeller 30 inches in diameter, 54 inches



YACHT ENGINE OF NEW DESIGN.

otherwise prevented from entering the atmosphere, the degree of suppression being determined by the quantity of such smoke emitted, as shown by the density and color of the issuing smoke and the length of time which it is visible, the maximum standard of comparison being a continuous discharge of dense, dark smoke during the time the furnace is in active operation." The penalty was fixed at not less than \$10 nor more than \$100 for each week during which the violation of the law should continue.

Acting under this law the Mayor of Boston named the superintendent of streets as the official to be charged with the enforcement of the act, and the latter, in order to secure some ground on which to deal with the smoke nuisance, instructed a thorough system of inquiry throughout the city. Inspectors were instructed to see every factory and other business place where bituminous coal was used. The investigation extended to a large number of items, including the time of erection of

deal with any manufacturer who shows no disposition to comply with the law.

Desertions from the United States Army show a large increase for the last fiscal year, and the problem is one which is said to be greatly exercising the minds of the military authorities. Meanwhile, however, enlistments have been so brisk, owing to the hard times, that more good recruits offer themselves for service than the army limit will admit.

French foreign trade showed a marked falling off for the first nine months of this year, compared with the corresponding period of 1892 and 1891, judging from the published official statistics. The imports were less by \$69,888,000 than they were last year, and by \$114,624,000 than in 1891. The exports were reduced to the extent of \$18,048,000 when compared with those of last year, and of \$24,960,000 with 1891.

pitch, at 170 revolutions per minute, giving a speed to the boat in which it is placed of from 7 to 8 miles per hour. Steam is supplied by a Foster serpentine steam generator built by Charles W. Foster of New Haven, Conn. The engine is placed in a boat having a length over all of 30 feet, length on water line of 25 feet and beam of $7\frac{1}{2}$ feet, and draft forward of $1\frac{1}{2}$ feet and aft of $3\frac{1}{2}$ feet. The general arrangement of the boat and the position of the engine and boiler are clearly shown in the cross section and vertical longitudinal section, Fig. 4. The engine is about 4 feet long, $3\frac{1}{2}$ feet wide at the widest part, and at no place does any part of it come above the floor of the boat.

The main peculiarities of the engine are found in the method for transmitting power from the piston rod to the propeller shaft and in the valve gear. It will be noticed from the perspective view and from Fig. 2 (the plan) that the propeller shaft is placed parallel with and alongside of the piston rod. Power is applied to the central joint of

a set of toggle levers by means of the sliding cross head, having a transverse slide in it to accommodate the sweep of one of the levers, which is fulcrumed to a stationary stud or pin. The outer end of the other lever is fulcrumed to a pin in an auxiliary cross head, which supplies the power to the crank by means of a connecting rod made in the usual way. This mechanism will be understood by reference to Figs. 1 and 2, showing the engine in plan and side elevation. E and F represent the high and low pressure cylinders respectively, G being the steam chest. To the piston rod I is attached the cross head J, to which the two connecting levers K L of the toggle are connected in such a way that they have a free sliding movement in the cross head, and, therefore, in no way interfere with the travel of the piston rod in a straight line. The rod K is fulcrumed to the bed A of the engine at the point shown. The other lever L of the toggle is pinned at Q to the auxiliary cross head R, which is arranged to move in the guide S. To this cross head is united the connecting rod T, which joins the crank pin D and drives the propeller shaft B in the usual way. It will be noted that all parts of the engine are mounted on the bed A, no frame of any description being employed, which fact, together with the general design and arrangement of the parts, make the engine extremely compact and of very low height.

A notable feature in the working of the engine is the almost total absence of vibration even when running at its highest speed. This is accounted for by the fact that the heaviest reciprocating parts, the pistons and piston rod connections, move in a line parallel with the keel, the only cross vibrations being those arising from the movement of the auxiliary cross head and its connections with the crank. So far the engine has given no trouble whatever and has performed its work with absolutely no hitch. Being the first one of this design, there are naturally several points where the construction could be

7, which revolves with the shaft and is fastened to the hub by gimbal joints or pivoted screws held in position by nut and jam nut, as clearly illustrated in Fig. 5. This ring is also fastened to the sliding collar by means of the connecting rod 2. This sliding ring can be shifted longitudinally on the shaft by means of the rod 5, thereby changing as may be desired the angle

greatest movement when the greatest angle of inclination is reached and the engine reverses its movement. In the yacht engine shown in perspective view the grooved ring is operated by means of a lever, the connecting rod of which is shown broken. A noteworthy feature of this design is its extreme sensitiveness; the slightest movement of the lever which shifts the sleeve on the shaft,

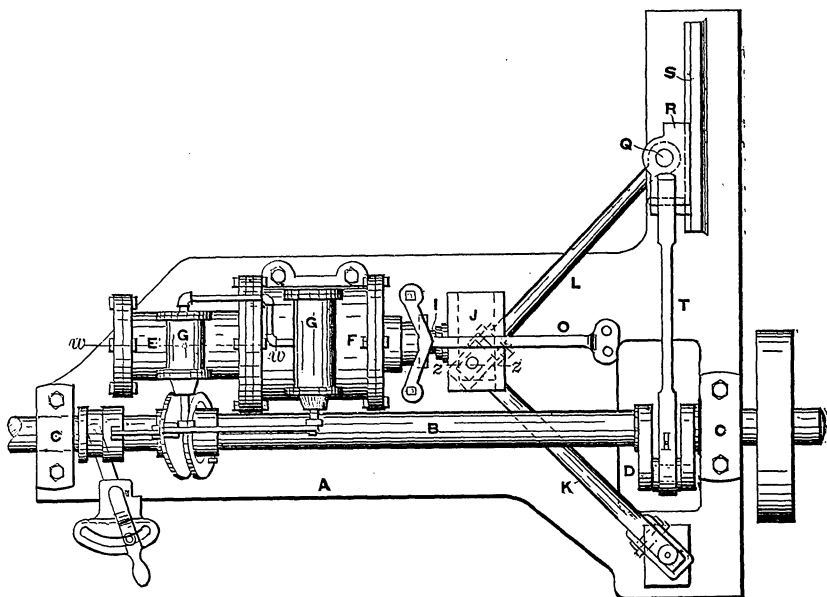


Fig. 2.—Plan.

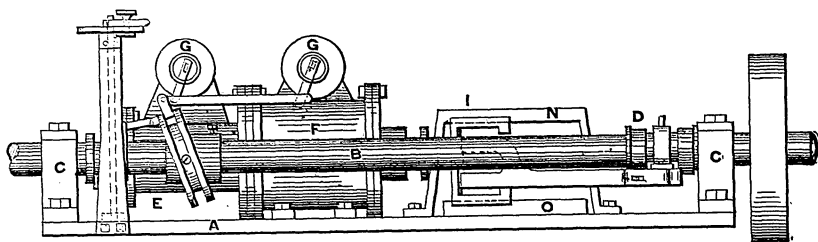


Fig. 3.—Side Elevation.

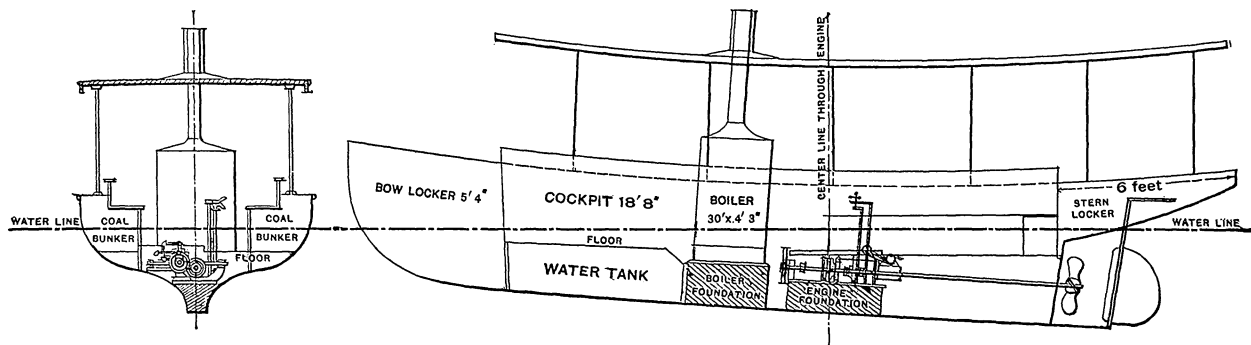


Fig. 4.—Cross and Longitudinal Section of Steam Yacht "Vena."

YACHT ENGINE OF NEW DESIGN.

improved and which would add materially to the efficiency.

The valve gear is shown in the first three views, and its construction and method of operation will be understood from Figs. 5, 6 and 7, the latter drawings not being taken from this particular yacht engine, but being taken from a former construction of a vertical engine embodying the same features. The valves of both cylinders are worked by the valve gear, also the invention of Mr. Littlejohn, which consist of a grooved ring, 3, Figs. 5, 6 and

of inclination of the grooved ring. Fitted to slide in the groove of the ring is a block to which the valve rod 6 is connected. It is evident that by shifting the grooved ring to one extreme angular position the valves will be given the greatest travel. This travel will also be reduced as the ring approaches a position having its plane at right angles with the shaft, in which latter position there will, of course, be no movement of the valve. Continuing to shift the ring in the opposite direction, the valves will be given their

and thereby alters the angle of inclination of the grooved ring, is instantly perceptible in the working of the engine.

Another adaptation of this method of moving the valves is found in the fact that the valve rods from four different valves can be connected in four different places in the grooved ring, and that each valve will have its proper movement independent of either, of the others. This would permit in this engine of placing two more cylinders tandem fashion parallel with the two it

now has and operating them by means of the same valve gear. Therefore the only additional parts, in order to transform this engine into a quadruple expansion, would be in adding two more cylinders and their connections with the crank. These points, in the opinion of the inventor, will greatly reduce the cost of such engine as compared with the usual construction, and by doing away with all framing render the engine stiffer and wonderfully more compact. Adding two more cylinders to this engine in order to make it a quadruple expansion would increase its size to only 6 feet square, but would not increase the height of 18 inches at all, so that it would be entirely below the deck of the boat and also below the water line.

It will further be seen that by slight changes in the design the engine can be adapted for manufacturing purposes, and can be made either of the vertical or horizontal type.

Electric Propulsion of Canal Boats.

The practicability of electricity as a motive power for canal boats was successfully demonstrated last Saturday on the Erie Canal. The experiment then made was the outcome of a message from Governor Flower to the New

An old steam canal boat was used, its engine and boiler being removed and their place taken by two Westinghouse motors of the standard street railway type, with the standard Westinghouse series multiple controller placed in the stern of the vessel, and connected with the propeller formerly operated by the steam engine. By the side of the steering wheel of the boat was placed a nickel plated switchboard similar to those used in street cars, which was designed to enable the steersman to apply or shut off electrical power as required, and so control the movement of the boat.

The arrangements for the experimental trip were made under the direction of Frank W. Hawley, vice-president of the Cataract General Electric Company of Niagara Falls, and the trial was witnessed by a number of distinguished electricians and other prominent persons

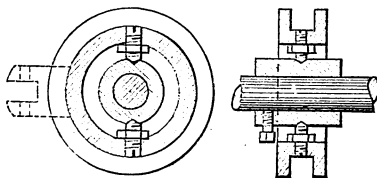


Fig. 5.—Grooved Ring Operating Valves.

aid of electrical motive force it could, it is believed, be increased fourfold, giving, as Governor Flower said, "new life to the commerce of States along the great lakes, and making the transportation on the Erie Canal equal to that on the Mississippi." It is intended eventually to supply the necessary electrical power from Niagara Falls, through the medium of the Cataract General Electric Company's system.

Among the distinguished persons who witnessed the experiment were George Westinghouse, Jr., Lemuel Bannister and Brayton Ives of the Westinghouse Company of Pittsburgh; Nikola Tesla, the electrician; Francis Linde Stetson, Dr. Coleman Sellers, H. B. Platt, Henry C. Brewster, Evan Thomas, Senator Parsons, John Bogart and other prominent citizens of New York and Buffalo. Nikola Tesla expressed himself as entirely pleased with the experiment, and declared that, in his opinion, "the people of the city of New York will eventually use electrical power from Niagara Falls to heat their houses and cook their meals." Mr. Westinghouse, speaking of the economy of running electrical canal boats, said: "I understand that eight men are now required to run canal boats. An electric canal boat will require two men—one to run the boat at night and one in the day. Moreover, space

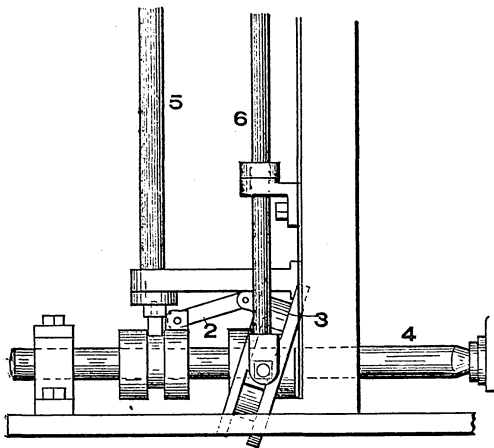


Fig. 6.—Valve Gear.

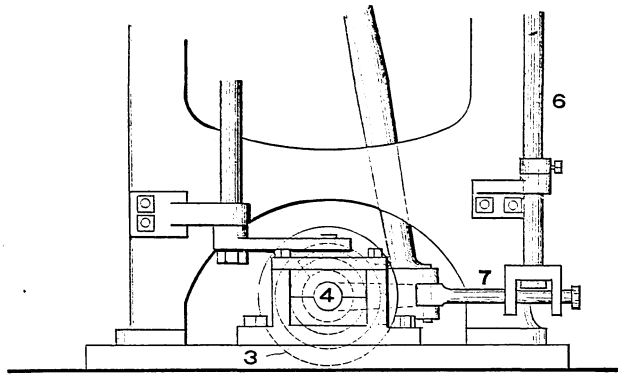


Fig. 7.—Valve Gear—View at Right Angles to Fig. 6.

YACHT ENGINE OF NEW DESIGN.

York State Legislature last winter, in which he suggested that an appropriation be made to prove whether or not canal boats could be propelled by electrical force. This suggestion was adopted by the Legislature, which appropriated \$10,000 for the purpose, and the attention of inventors was invited to the matter. As a consequence the Westinghouse Company of Pittsburgh were intrusted with the work of supplying the machinery and apparatus necessary for the experiment, and it was their system that was tried last week. The trial took place at the Pittsford level of the Erie Canal, about 3 miles distant from Rochester, N. Y., the electrical power being supplied by the Rochester Railway Company, whose trolley wires run out to Brighton on the line of the canal. These were tapped on to the canal trolley wire, passing thence through the motors and up another trolley to the return wire. The canal trolley wires were stretched for nearly a mile along a portion of the canal which presents several sharp turns, and therefore gave as severe a test of the system as could be desired.

from New York City, Buffalo, Rochester and other cities, as well as a large representation of State officials, who accompanied Governor Flower in the boat. At 11 a.m. on November 18 the official start was made, the Governor turning on the current. The boat moved off smoothly and steadily at an estimated speed of $3\frac{1}{2}$ miles an hour, working up later to 8 miles an hour, with the apparatus operating to the entire satisfaction of those interested in the important experiment.

The desired proof being given of the practicability of the system, it now remains for the Legislature to determine as to whether it shall be generally adopted on the canals, and of this there is little doubt. It is just 64 years ago since the first canal boat went through the Erie Canal, and there has been no change in the method of propulsion, so that the employment of electricity is likely to revolutionize canal traffic. The innovation, too, is calculated, in the opinion of good judges, to immensely increase the freight traffic on the Erie Canal. This now amounts to some 3,000,000 tons annually, but with the

will be saved, for there need not be any place left for stables for the horses or mules."

The Chattanooga *Tradesman* makes a statement which reveals how very grave was the position of some of the Southern iron makers during the recent panic. Our contemporary says: "A good deal of Southern iron is held by railroads that have taken it in payment of freights, and though this in the aggregate is not large as compared to the whole product there is enough of it to seriously interfere with the market, for it is understood the holders of this railroad stock will sell at net cost, if they cannot do better. Some 2000 tons of this surplus was sold a few weeks ago at private figures, but the price was generally understood to be about \$1 a ton below furnacemen's quotations of the same brand." Unless some of the lake iron ore carriers have been forced to hold on to ore as security for freight bills there has been no other branch of the iron trade, so far as we can learn, in which the railroads control product.

Heavy Steel Forgings.—I.*

Their Production in the United States.

BY RUSSELL W. DAVENPORT, BETHLEHEM, PA.

After dealing with the history and the development of the forging plant of the Bethlehem Iron Company, Mr. Davenport, second vice-president of the company, discussed as follows the conditions necessary and the most improved methods employed for producing uniformly reliable forgings of such quality as to offer maximum resistance to working strains.

The subject may be divided as follows:

1. The casting of ingots.
2. The conditions of shaping or forging.
3. Treatment after forging.
4. Introduction of unusual ingredients into the composition of the steel intended to give to it desirable qualities.

Casting of Ingots.

There are certain defects which are likely to occur in all steel ingots. They are of more frequent occurrence and more serious in their nature as the ingots increase in weight and dimensions. In general they are developed during the solidification and cooling of the fluid steel, and are, for the most part, caused by the great change of temperature which then takes place. They can be classified as follows:

Interior shrinkage, or "piping," caused by the outside of the ingot cooling more rapidly than the inside and producing cavities and a porous condition of metal along the central axis, or line of last cooling. These defects assume serious proportions and concentrate within conical lines in about the upper one-third of the ingot.

Blow holes, or cavities, due to the evolution of gas during cooling and solidification, which under certain conditions of melting and composition occur throughout the mass, but especially near the surface and toward the upper part of the ingot.

External or surface cracks, caused by the rapid shrinkage of outside or skin of ingot, and at times due to hydrostatic pressure of the internal and fluid portion.

Internal cracks, due to interior strains set up by too rapid cooling, and occurring most frequently in ingots of hard steel.

Segregation, which is the name given to the change which takes place in the chemical composition of a mass of steel in cooling, and is due to the liquation or concentration of certain ingredients, principally carbon, phosphorus, sulphur, and to a less degree silicon and manganese, toward the central and upper portion of the ingot, where cooling and solidification of the metal last takes place.

A number of expedients are resorted to in ordinary practice, with more or less success, for controlling and avoiding these defects, but, without doubt, the most efficient of all methods is the application of the Whithworth process of fluid compression.

At the Bethlehem Works this process is in daily use in the production of large ingots for gun, shafting and miscel-

laneous machine forgings, and masses of steel of great weight are thereby produced which are to a high degree sound and homogeneous, and which, when prepared by boring for hollow forging, are practically free from all defects.

Conditions of Shaping and Forging.

When a mass of steel is to be shaped or forged the first requisite is careful and uniform heating to a proper temperature. This is greatly a matter of experience and skill and requires unremitting care and attention. The next requisite, and one of the first importance, in order to obtain reliable results, is the use of forging machinery of proper design and power for the work in hand.

The presence of internal strains and defects, causing failure of many forgings, can be attributed to the shaping being done with hammers of insufficient power, and especially if the power is developed by a high velocity of impact rather than by weight of falling mass.

The pressure applied in shaping a body of steel should be sufficient in amount and of such character as to penetrate to the center and cause flowing throughout the mass. This flowing of the metal requires a certain amount of time, and therefore the requisite pressure should be maintained during a corresponding period in order to insure thorough action. The quick blow of a hammer of insufficient power is absorbed near the surface of the mass struck, and there causes a local movement or extension, and repeated blows of this description, stretching the exterior more rapidly than the interior, bring a tearing strain on the core or central portion, producing at times actual cavities, which are defects of the most dangerous kind. This action is visibly demonstrated by the ends of forgings made under the last conditions named assuming a concave or cupped form, due to the exterior drawing more rapidly than the central portion.

The conditions of forging attained by the use of the hydraulic press are evidently the reverse of those above mentioned, and are correspondingly favorable to obtaining the best results. The pressure is definite and constant and acts slowly but uniformly throughout the distance traversed by each stroke. As a result, there is ample time for the pressure to distribute itself, and if sufficient in amount it causes flowing throughout the entire section operated upon, the tendency being to squeeze out and extend the central portion even more rapidly than the exterior. A similar effect is attained, though to a less degree, by the use of a hammer developing ample power for the work to be done, especially when the power is due to a great weight falling by the force of gravity only and thus reducing the velocity of impact to a minimum. The action of the forging presses in the Bethlehem shops fully substantiates the theory as above indicated, and no forgerman can observe the actual slow but continued flowing of the metal throughout the section and the central bulging at the ends without knowing the shaping is being done under the most favorable conditions. The increase of the falling weight of the great Bethlehem hammer to 125 tons, as already mentioned, was an eminently wise step as insuring to a considerable degree conditions similar to those above described, even when forging the ingots of the great weight and section required for heavy armor plates. The thoroughness of the work done is indicated by

the comparatively small number of blows required to effect the reduction in area and by the bulging convex shape of the ends of plates.

A most important factor in the use of hydraulic presses for forging is the ability to produce with them long lengths forged hollow over a mandrel, and this class of forgings is especially adaptable to marine shafting and the parts of built up guns.

In the manufacture of hollow forgings the conditions of shaping are in all respects favorable to the production of sound work of the highest quality. A hole of suitable size is bored throughout the central axis of the unforged ingot, thereby removing the portions rendered defective by segregation and piping and disclosing any interior defects that may not have been removed by boring. The bored ingot forms a hollow cylinder with walls much thinner than the cross section of the solid ingot; this condition greatly facilitates heating and practically removes the danger of internal cracking during that operation. The forging of the comparatively thin walls of the cylinder over a solid mandrel also insures thorough work and makes it possible to turn the forging out at a low and uniform heat, thus fixing a uniformly fine or amorphous grain. A solid forging, on the other hand, of the same outside diameter, would be much hotter toward the central axis than on the outside, and the gradual loss of this high internal heat will tend to coarsen the grain by crystallization and set up internal strains. In the hollow forgings any internal defects show themselves on the inner surface, while in solid forgings their presence is hidden and can only be disclosed by boring. Hollow forgings of beautiful appearance and of large variety of dimensions are daily produced under the hydraulic presses at the Bethlehem forge, and this class of work is well represented in the company's exhibit at the Chicago Exposition by several fine specimens, one of which is a shaft 20 inches outside diameter, 67 feet long, with a hole 8 inches in diameter forged through the entire length.

Treatment After Forging.

There are two processes usually employed in the treatment of steel forgings after they leave the press or hammer—viz., annealing and tempering, or hardening, or a combination of the two. To these must be added surface or case hardening, which, while heretofore frequently used in the treatment of small forgings, has recently come into prominence on a large scale in the application of the Harvey and other processes to the production of hard faced armor plate.

The primary object of annealing is to relieve internal strains set up by forging, and by rapid and irregular cooling during and after forging. In addition to this, annealing alters the molecular condition of the steel, and when applied under proper conditions has a tendency to break up crystallization and fix a finer or more nearly amorphous grain, whereby the toughness of the material is increased. The general effect of annealing, as indicated by the tensile tests of specimens, is to lower the tensile strength and elastic limit and increase the elongation and contraction of area.

Hardening or tempering of steel forgings consists in cooling them rapidly, usually by immersion in oil, from a red heat varying in degree according to conditions, and hence it is generally

* From a paper read at the first annual meeting of the Society of Naval Architects and Engineers.

spoken of as oil tempering. The object of this treatment is, 1, to break up the irregular and more or less laminated and coarse crystalline structure produced by forging, and to fix a fine or amorphous condition of grain; and, 2, to modify the physical properties of the metal, with a view of obtaining the most desirable combination practicable.

The sudden cooling in oil or otherwise naturally produces strains which, unless properly guarded against and relieved, are hurtful, and under certain conditions may be so great as to cause actual rupture. To avoid this latter danger, precautions both as to shape and composition are necessary; but of first importance is the removal, when possible, of the metal along axial lines before tempering, so as to effect internal as well as external cooling. This must often be done by machining, but it is evident that forging hollow furnishes a product especially well adapted to tempering. Annealing is resorted to after tempering, 1, to relieve strains, and, 2, to soften the metal to a degree required to obtain the physical qualities aimed at. The effect of this double treatment—tempering and annealing—as indicated by tensile tests, is in general to increase the elastic limit relatively to the tensile strength and, when the hardness is "drawn" by annealing, to increase materially the elongation and especially the contraction of area.

Treatment by tempering has been applied in the manufacture of steel gun forgings and armor plates for a number of years with highly satisfactory results, and the great amount of testing, by breaking specimens cut from full sized prolongations of the actual forgings after treatment, required in gun steel and armor plate specifications, had provided such a mass of information bearing upon the effect of this treatment on various grades of steel as to enable the manufacturer to obtain with great precision certain specified qualities in tempered material. Comparatively little has been as yet done toward the treatment by tempering of marine shafting and engine forgings; but it is believed that with the growing importance of decreasing the weight and increasing the strength of such forgings, a large field for improvement is open in this direction to the marine engineer.

Introduction of Unusual Ingredients.

The introduction into steel of ingredients other than those usually present, for the purpose of imparting to the metal desirable physical qualities, is a subject which has called forth much experimental work and study.

Results of practical value have been obtained with chromium, tungsten, manganese (in more than usual quantities), aluminum and nickel, and some experiments have been made with copper.

Chromium and tungsten, in moderate amounts, are for the most part used in high carbon crucible steels, to which they impart special hardening properties found useful for cutting tools. Chrome and tungsten steels, especially the former, have also of recent years been brought into prominence by their successful application to the manufacture of armor piercing projectiles, and a considerable amount of chrome steel is now produced in open hearth furnaces.

Manganese, when introduced in considerable quantities, say from 3 to 15 per cent., imparts to steel remarkable toughness, together with such great hardness as to render machining im-

practicable, and its useful application is therefore limited.

Aluminum in small quantities acts in a remarkable manner to increase the fluidity of steel when cast, and prevents the formation of blow holes during solidification, and has consequently found wide use in the production of solid steel castings.

The introduction of nickel into steel, while only of recent development, has been found to impart to the metal highly desirable qualities, and as this alloy, containing definite proportions of nickel, can be successfully and uniformly produced by the open hearth process, it is especially applicable to the classes of large forgings now under consideration. The physical properties of the alloys of nickel and steel were first brought to general public notice in an admirable paper by James Riley of Glasgow published in the *Journal of the Iron and Steel Institute*, Vol. I, 1889.

Experiments in the use of nickel steel for armor plates were soon after undertaken by the Creusot Works, and were so successful that during the winter of 1890 Schneider & Co. were ready to submit a plate of nickel steel for public trial. The probable superiority of nickel steel for armor had been early brought to the attention of the Navy Department, and in 1890 Secretary Tracy authorized the purchase from the Creusot Company of two experimental 10½-inch plates, one of simple and one of nickel steel. A Cammel compound plate of same dimensions was also procured, and in September of the same year the famous comparative trial of the three plates above named took place at the Annapolis Proving Ground. As is well known, the nickel steel proved superior to the others, especially on account of its freedom from cracks. As a result of this trial, nickel steel was adopted for the armor of the navy. The production of nickel steel was undertaken by the two firms having contracts for armor—viz., the Bethlehem Iron Company and the Carnegie Steel Company, Limited—and within a year after the above mentioned trial successful results were obtained. Since then nickel steel armor plates have been regularly produced in large quantities.

The physical properties of nickel steel vary greatly, according to the amount of nickel contained. A steel containing about 3½ per cent. of nickel has, up to the present time, been generally used for armor plate, and much information as to its qualities has been obtained. In general, the presence of this amount of nickel (3½ per cent.) increases the hardness—i. e., the tensile strength and elastic limit—without causing a corresponding reduction in elongation and contraction; and the elastic limit is also increased relatively to the tensile strength. These properties indicate toughness.

The presence of this amount of nickel appears also to hinder crystallization after forging and favors a finely granular or amorphous condition. It also renders the steel more susceptible to the effects of tempering, and it is in tempered steel that the improved qualities are most apparent. As shown by the ballistic tests of armor plate, the presence of nickel materially increases resistance to shock, and, in short, in all respects improves the physical qualities of mild steel.

From the above it is evident that the use of nickel steel should not be confined to armor plate, and that a wide field of application is open to it in the fabrication of gun and marine engine forgings, as well as many other products.

In conclusion, it may be of interest to summarize, from a metallurgical point of view, the present status of the manufacture of the three classes of steel forgings under consideration, and to indicate the lines in which improvements can be made.

American Society of Mechanical Engineers.

The next convention of this society will be held at the home of the society, 12 West Thirty-first street, New York, December 4 to 8. At the first session, Monday evening, the president, Eckley B. Coxe, will welcome the members and deliver his presidential address. There will be no sessions during the afternoons; members can then visit the following places:

Morgan & Quintard Iron Works; North River Iron Works; Pond Machine Tool Works; Stevens Institute of Technology; Columbia College, School of Arts, Law, Mines; Columbia College, School of Medicine (College of Physicians and Surgeons); Pratt Institute; Washington Bridge; Shipyards and Works, S. L. Moore & Sons Company; Metropolitan Museum of Art; Museum of Natural History; East River Gas Works; Ball & Wood Engine Company; Power Houses, Broadway Cable Road; Power House, 125th street Cable Road.

The following papers will be presented:

A. K. Mansfield, "The Buckeye Engine Valve Gear."

R. H. Thurston, "The Maximum Contemporary Economy of the High Pressure Triple Expansion Engine."

Geo. A. Morison, "Expansion Bearings for Bridge Superstructures."

Barton Cruikshank, "A Device for Drill Jigs."

Fred'k A. Scheffler, "A Curve De-lineator."

Fred. W. Taylor, "Notes on Belting."

R. C. Carpenter, "Some Experiments on the Effects of Water Hammer."

R. C. Carpenter, "Constants for Correcting Indicator Springs which have been Calibrated Cold."

W. S. Aldrich, "The Use of the Indicator in Dynamometric Testing."

R. C. Carpenter, "A New Form of Prony Brake."

D. S. Jacobus, "A Comparison of Mean Effective Pressures of Simultaneous Cards taken by Different Indicators."

H. L. Gantt, "Recent Progress in the Manufacture of Steel Castings."

Wm. A. Pike, "Steam Piping and the Efficiency of Steam Plants."

Chas. H. Manning, "A Method of Manufacture of Large Steam Pipes."

Jas. B. Stanwood, "Strength of Rim Joints in Flywheel Wheels."

R. C. Carpenter, "Experimental Determination of the Effect of Water in Steam on the Economy of the Steam Engine."

F. A. Scheffler, "Test of a Boiler Using Grates with a Small Percentage of Openings."

Wm. A. Rogers, "The Cumulative Errors of a Graduated Scale."

Wm. H. Francis, "A Modern Disinfecting Plant."

W. S. Crane, "Crucible Furnace Using Petroleum."

David Guelbaum, "Theory of Direct Acting Steam Pumps."

The project of cutting a ship canal between Chesapeake Bay and the Delaware River has recently been revived.

The Bailey Air Pump.

From the recent report of Geo. W. Melville, Engineer in Chief of the Bureau of Steam Engineering, United States Navy, we take the following account of a test made of this pump, which was designed by Passed Assistant Engineer Frank H. Bailey, United States Navy, at present attached to the Bureau of Steam Engineering, for the purpose of securing a pump which would be very small and light, and at the same time efficient at very high speeds, so that it might be attached directly to the main engine in the case of steam launches, torpedo boats, and other small fast-running engines.

The essential idea in the pump is to have no foot valves and to have delivery valves, *a a*, which cover the whole end of the cylinder, thus insuring complete discharge of the contents of the pump at the end of the stroke without much effort being required.

The pump which was used for the experiment was adapted to fit a launch engine with cylinders $3\frac{1}{2}$ and 7 inches by 5 inches stroke, and for that reason the shape of the pump is somewhat different in details from pumps designed with a new engine. The details of the pump are shown on the annexed drawings. It will be seen that the diameter of the pump is 2 inches and the stroke $1\frac{1}{2}$ inches.

The piston *d* has a width of 1 inch, and is so designed with reference to the length of the cylinder that when at the end of the stroke it just passes the opening *b* for the admission of air and water from the condenser. After traveling a short distance on the return stroke this suction opening is shut off and remains so until the other end of the piston has passed it, the contents already received being driven before the piston until near the end of the stroke, when the discharge valve is lifted and the contents expelled.

The suction opening consists of a port cut in the shell of the cylinder all the way round except for the bridges necessary to hold the two halves together. The discharge valves in this case were $\frac{1}{8}$ -inch thick, of composition, held in place by light springs and guided so as to insure their seating evenly.

The pump was driven by means of a beam with connection to the low pressure cross head of the engine.

Four trials were made. The first, with the boat tied to the wharf and in still water; the second, with the boat under way and under normal working conditions. Both of these trials were made with the propeller attached to the shaft. In order to secure a higher number of revolutions than was possible with the screw connected, it was then removed and the third trial was made with the boat alongside the dock and the water around the boat at rest. The fourth trial was made with the boat moored in a current of about 2 knots an hour.

The condenser was of the keel pattern, consisting of a copper pipe running from the condenser discharge on one side around to the air pump on the other, and, of course, when the boat was secured to the wharf the circulation of the water past it was absolutely *nil* in the case of disconnected propeller, while with the propeller connected it was very small.

The results of the tests are shown in the following table, and it is to be noted that at as high a speed as 1000 revolu-

tions per minute, and with the poor flow of refrigerating water, due simply to the current in which the boat was moored, the vacuum was still 21 inches. It will also be noted that, under normal conditions, with the propeller in place and the boat driven through the water, the vacuum was 25 inches at as much as 250 revolutions.

the condenser might fill with water, due to the use of the "bleeder." To obviate this the pumps are arranged in pairs, with the cranks or eccentrics driving them at right angles, and the suction openings of such a size that it will be impossible, in any position, for both suction to be closed.

First Trial.

Revolutions.	Vacuum	Steam pressure	Cooling water.	Feed water.
140	20	115	44	90
158	20	138	44	122
180	17.5	180	44	135
170	17	155	44	140

Second Trial.

Revolutions.	Vacuum	Steam pressure	Cooling water.	Feed water.
208	25	105	44	50
225	25	120	.....	52
250	25	150	.....	60
254	25	155	.....	61
245	25	145	.....	60
235	25	155	.....	60
240	25	138	.....	56
255	25	155	.....	61
227	24.5	120	.....	54
240	25	140	.....	58

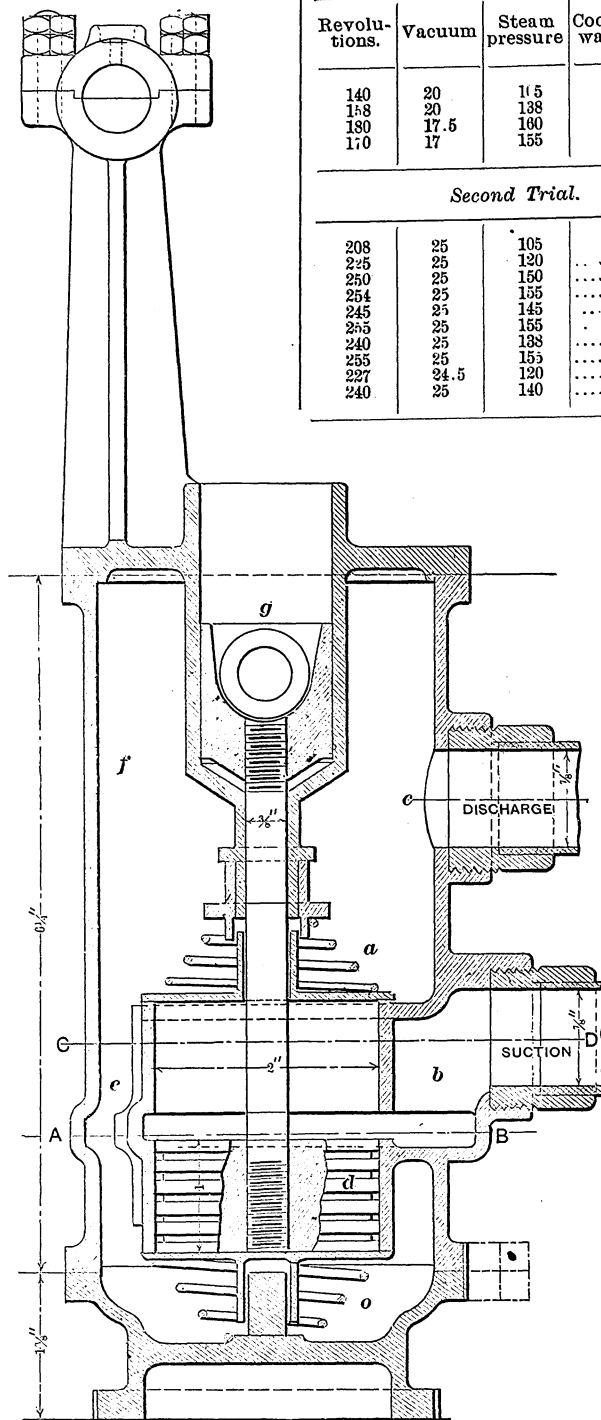


Fig. 1.

THE BAILEY AIR PUMP.

The pump ran quietly and without any jar or thump, and on examination after the trials were finished the valves, springs and pistons were found in good condition.

The pump in question was designed simply for experimental purposes, and there was, therefore, but a single one. In ordinary work the pumps will be in pairs, inasmuch as it might happen, if a single pump were used, that the main engine might stop in such position that the suction opening would be closed and

Third Trial.

Revolutions.	Vacuum	Steam pressure	Cooling water.	Feed water.
585	22	155	50	68
638	22	155	50	70
720	22	155	50	100
790	15	155	50	138
840	15	155	50	120

Fourth Trial.

Revolutions.	Vacuum	Steam pressure	Cooling water.	Feed water.
680	22	110	44	62
855	22	130	44	110
900	21	140	44	110
1,000	21	140	44	112

The Naval Architects.

Inaugural Session of the Society of Naval Architects and Marine Engineers.

The first annual meeting of the Society of Naval Architects and Marine Engineers was held in the rooms of the American Society of Mechanical Engineers on the 16th and 17th insts., with C. A. Griscom, president of the International Navigation Company, in the chair. The president in his welcoming address said: "It seems to me to be significant that our society should be called into existence coincident with the construction of our new national navy, showing that the appropriations made by Congress for a series of cruisers and battle ships not only bears an influence to our flag, but tends to stimulate throughout the land an interest in maritime affairs without which no nation can be truly great. The national sentiment which is now producing a new navy cannot overlook

First vice president, Theodore D. Wilson of Washington, ex-Chief Constructor, U. S. N.

Vice-presidents, Chas. H. Cramp of Philadelphia, president Wm. Cramp & Sons' Ship and Engine Building Company; George W. Melville of Washington, D. C., Engineer-in-Chief, U. S. N.; Geo. W. Quintard of New York, president Quintard Iron Works; Irving M. Scott of San Francisco, vice-president and general manager Union Iron Works; Francis A. Walker of Boston, president Massachusetts Institute of Technology; Wm. H. Webb of New York, naval architect (retired); Charles H. Loring of Brooklyn, ex Engineer-in-Chief, U. S. N.; Philip Hichborn of Washington, Chief Constructor, U. S. N.; R. W. Meade, Commodore, U. S. N.

Secretary and treasurer, Washington L. Capps of Washington, Assistant Naval Constructor, U. S. N.

Among those present at the meeting were the following: R. W. Davenport, vice-president Bethlehem Iron Company, South Bethlehem, Pa.; Charles E. Emory, New York; G. A. Cormack, secretary Corinthian Yacht Club; W.

Wm. Cramp & Sons' Ship & Engine Building Company, on

The Evolution of the Atlantic Greyhound.

The author stated that for general purposes of historical accuracy it was sufficient to say that the first real "send off" in the great modern steamship race was given by the Inman Company in 1869-70 by the "City of Brussels," which broke the record by a passage of 7 days 22 hours and 3 minutes, being the first to get within the eight day limit. She was 390 feet long between perpendiculars, 40 feet 4 inches beam, and registered 3090 tons gross, her displacement at 26 feet draft being 6900 tons. Her engines were simple, direct acting, with two 90-inch cylinders of 54 inch stroke, and with steam at 30 pounds she developed 3020 indicated horse-power and realized an average speed of 14.53 knots in her best trip. The White Star people then built the "Oceanic," which was of 3808 tons, 420 feet long, 40 9 feet beam and depth of 23.4 feet. She was powered with a pair of compound engines having four

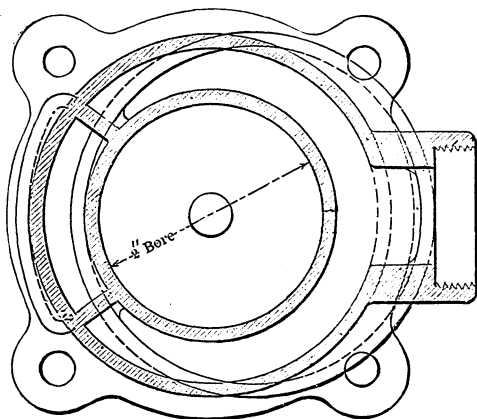


Fig. 2.—Section on C D of Fig. 1.

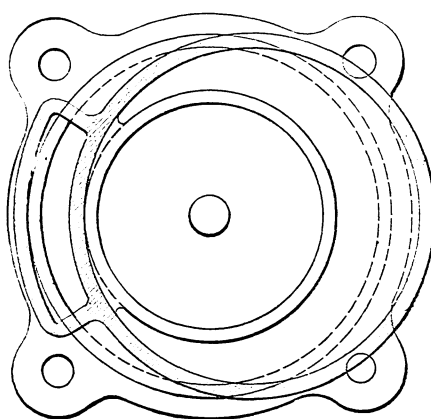


Fig. 3.—Section on A B of Fig. 1.

THE BAILEY AIR PUMP.

the axiom that a navy cannot be maintained without a merchant marine to sustain it. That the art of shipbuilding has not expired with you is shown by the magnificent types designed and constructed for the trade of our coast. Nothing can be more significant than the fact that you were always able, when necessary, to build a better naval cruiser than the last, and a better yacht to defend the "America's" cup. As I am one who believes the cup is here to stay, so I believe also that your architects and engineers and mechanics will show that the skill still remains with you not only to cope with the highest talent of any country, but also to keep in advance of it."

Francis T. Bowles, chairman of the Executive Committee, then presented a report showing the society to be in a flourishing condition, both in regard to its membership and finances. It had 4 life members, 4 life associates, 260 active members, 165 associates and 2 juniors, making a total of 435; the total receipts, \$5403; total expenditures, \$767, leaving a surplus in the treasury of \$4636.

The officers elected for the ensuing year were:

President, Clement A. Griscom of Philadelphia, president International Navigation Company.

M. McFarland, Bureau Steam Engineering, U. S. N., Washington; Col. E. A. Stevens, president Hoboken Ferries, Hoboken, N. J.; Francis T. Bowles, Naval Constructor, U. S. N., Norfolk, Va.; J. F. Holloway, 145 Broadway, New York; Wm. Gardner, 1 Broadway, New York; C. D. Mcsher, 1 Broadway, New York; Col. H. G. Prout, editor *Railroad Gazette*; M. N. Forney, editor *American Engineer and Railroad Journal*; Charles Kirchhoff, editor *The Iron Age*; M. N. Baker, associate editor *Engineering News*; S. D. V. Burr, mechanical editor *The Iron Age*; Prof. J. E. Denton, Stevens Institute, Hoboken, N. J.; Prof. W. F. Durand, Cornell University, Ithaca, N. Y.; S. Dana Greene, General Electric Company, New York; Jas. T. Boyd, general manager George F. Blake Mfg. Company, New York; C. H. Haswell, New York; H. B. Roelker, New York; A. A. Henderson, Chief Engineer, U. S. N.; A. P. Niblack, Lieutenant, U. S. N.; J. J. Woodward, Naval Constructor, U. S. N.; A. H. Raynal, superintendent S. L. Moore & Sons Co., Elizabeth, N. J.; Prof. C. H. Peabody, Massachusetts Institute Technology, Boston; F. M. Wheeler, Wheeler Condenser & Engineering Company, New York.

The first paper presented was by Charles H. Cramp, president of the

cylinders, two high pressures of 29 and two low pressures of 78 inches diameter, on the tandem plan, with a 60-inch stroke, and carried usually 66 pounds of steam. The distinguishing feature of the "Oceanic" was her extraordinary proportion of length to beam, and her ratio of 10½ to 1 in that respect was considered a remarkable venture on the part of her builders. The same company then brought out the "Adriatic" and "Celtic" of 3886 tons, 417 feet long, 41 feet beam, and propelled by 4-inch cylinder compound engines. The former lowered the record to 7 days 16 hours and 26 minutes.

While these enterprises of the White Star Line were in progress a movement was started on this side of the ocean which at first bid fair to permanently enlist American capital and spirit in an effort to regain the position of a maritime commercial power which had been lost through the war. This resulted in the formation of the American Steamship Company and the construction by the Cramp Company of four steamships known as the "Carolina," "Illinois," "Pennsylvania" and "Ohio," which were commissioned in 1872-73. They made eight day trips, and for a time attracted their share of the transatlantic traffic, but succumbed at length to the competition of their subsidized British

rivals and ultimately passed under the control of the International Navigation Company, by whom they have been considered worth re equipment with new triple expansion engines after 20 years of continuous service. These ships, though not so large or so high powered as some contemporary vessels, embodied the best shipbuilding practice of their date as to material and workmanship, and are still creditable specimens of American shipbuilding skill 20 years ago, as well as of first-rate efficiency in their classes.

The "City of Berlin" was contracted for by the Inman Company in 1873. She was distinguished by having the greatest proportion of length to breadth thus far attained—namely, 11 to 1. In other respects the "Berlin" was the finest ship of her time, and she brought the record down to 7 days 15 hours and 28 minutes. Then followed the "Germanic" and "Britannic" of the White Star Line, which brought the record down to 7 days 6 hours and 52 minutes. These ships held the pennant from 1874 to 1879. The "Arizona" of the Guion Line then entered the race and made a record of 7 days 3 hours and 38 minutes, which she held during 1879-80. Her principal dimensions are 450 x 45.4 x 35.7 feet, and she is powered with three-cylinder compound engines, having one 62-inch high and two 90-inch low pressure cylinders, 66-inch stroke, and, with steam at 90 pounds, developed 6640 indicated horse-power.

Next came the "Alaska" and "City of Rome," between which the contest was fierce. Trip after trip they sped over the ocean "neck and neck," as horsemen say, the average difference between their records being but a few minutes. Finally, however, the "Rome" got down to 6 days and 18 hours, which beat the "Alaska's" best by 37 minutes, and then the "Rome" hoisted the banner in her turn. The "Rome" was the largest ship of her day, excepting, of course, the "Great Eastern;" at all events the largest single screw ship up to her date. Her dimensions are 560 x 52 x 37 feet, her gross tonnage 8144 and her maximum horse-power 11,500 indicated.

The "America" of the National Line then made a record of 6 days 14 hours and 16 minutes, and was followed by the "Oregon" of the Guion Line with 6 days 9 hours and 22 minutes. The "Oregon's" engines were three-cylinder compound of the highest working pressure attempted up to that time. Her high pressure cylinder was 70 inches and her two lows 104 inches, with 72-inch stroke, and, carrying steam at 110 pounds, she developed 13,200 horse-power, by far the most massive and powerful engines built at that date. The "Umbria" and "Etruria" of the Cunard Line then brought the record to 6 days even, and held it during 1884-89. It was evident that in them the possibilities of single screw propulsion had been exhausted, and owners and builders who meditated an advance beyond them had to contemplate twin screws.

During the years 1885, 1886 and 1887 there was much activity on the part of the French and Germans. The latter brought out the "Aller" of the North German Lloyds in 1885, the "Saale" and "Trave" in 1886 and the "Lahn" in 1887. These were British ships built at Fairfield. They were all single screw vessels, but they had the distinction of introducing the triple expansion engine in transatlantic propulsion. The "Fürst Bismarck" is chiefly remarkable as being the most impor-

tant commercial ship ever built in Germany, and as a result of the policy adopted by the German Emperor to encourage home shipbuilding by making marked discriminations in favor of such ships as compared with those built abroad. Her dimensions are 502½ x 57½ x 38 and tonnage 8874. Her engines are triple, with cylinders 43½, 66½ and 106½, having a stroke of 63 inches. She developed 16,800 indicated horse-power as a mean of six days on the trip which gave her for a brief period the Southampton record.

We have now to consider the latest types, the "New York" and "Paris," the "Majestic" and "Teutonic," and the "Campania" and "Lucania." These ships are so well known and have been so recently and minutely described that it is not necessary to reproduce their details, and I will pass at once to another, and perhaps more interesting phase of my subject, but before passing on, it should be mentioned that to the International Navigation Company in procuring the building of the "New York" and "Paris" belongs the credit of inaugurating the evolution from single to twin screws in passenger ships, and of first offering to the public steamships so subdivided as to be unsinkable with three compartments flooded and with no water-tight doors near or under the water line.

The author criticised the principal fad of the great English builders who have an aversion to statical stability; a repugnance to metacentric height. As one of their standard authorities remarked in a recent paper, "a ship will roll; you cannot help that. Therefore the problem is to make her period as long and her motion as easy as possible."

The author believed that any design which contemplates the carriage of water ballast (or other dead weight not cargo or coal) as an inseparable condition of stability under any circumstances is radically defective and should be condemned.

Under such a system no advantage can be taken of decreased draft caused by consumption of coal or absence of cargo, but the ship must always be kept down to a load draft in order to stand up.

The proposition that you must carry 1000 or 2000 tons of dead weight in water ballast when you happen to be short of cargo or run down in coal is one that I cannot really discuss with patience when it is possible to build the ship on lines that will make her stand alone without detriment to any other desirable quality, and with vast improvement to her most important characteristic, that of safety at all times and in all conditions.

After briefly considering the increase of size as an element in the development of speed, the author made the following remarks on the two ships his company are building for the International Navigation Company: Length on load water line, 536 feet; length over all, 554 feet; extreme breadth, 63 feet; molded depth, 42 feet; gross register, about 11,000 tons; first cabin capacity, 320 passengers; second cabin capacity, 200 passengers; third cabin capacity, 900 passengers.

Their propulsion will be by twin screws, actuated by two quadruple expansion engines on four cranks, which, with steam at 200 pounds, will probably develop about 20,000 collective indicated horse-power. To support the outboard shaft bearings the hull is built out in a horizontal web to a steel frame having both bosses cast in one piece

and weighing about 68,000 pounds. The after deadwood is cut away and the keel slopes up so that the shoe meets the boss frame at the after end. It will be observed that these ships are considerably larger than the "New York" and "Paris," or about half way between them and the "Campania" class. I will not venture a prediction as to their probable performance, but I will guarantee them to be perfectly safe, comfortable and economical ships.

They are to be followed closely by other ships, which I will not now describe, except to say that they will not shrink from any comparison or competition.

The paper by James T. Boyd, general manager of the George F. Blake Mfg. Company, criticised the present inspection laws for machinery and boilers, and presented suggestions as to their improvement. The pay is at present too small, and an increase should be graded somewhat according to the localities, but not with any such difference as now exists. The samples received for tests are generally the only material seen by the inspectors until work is completed and ready for certificate. No visits are made to the works during construction; the only knowledge the inspectors have of the boiler work is the description given on affidavit, submitted with samples, and occasionally by a blue print of the boiler drawing. Proper inspection should include the examination of the work at different stages, and allowances should be made where good workmanship is shown and deductions where work is poor.

The author was of opinion that the number of inspectors should be increased, especially in those districts where vessels are built and engined. There are no rules to govern an inspector in regard to machinery. Concerning tests of boiler plates, it is stated that the elastic limit should be determined in all tests for tensile strength, and a percentage of this limit should be used in the formula for strength of shells in place of a percentage of the ultimate strength. The author was of opinion that a complete revision of the rules should be made.

Coal Bunkers and Coaling Ship

was the title of a paper by Lieut. A. P. Niblack, U. S. N., who presented an array of facts showing that the vessels of the navy could not be coaled rapidly because of the disposition of bunkers and lack of adequate facilities. The following table shows the capacity of the bunkers of some of the ships of the navy and the time required to fill and trim them:

	Total coal capacity. Tons.	Time required to fill bunkers. Hours.
Atlanta.....	490	33
Chicago.....	824	28
Charleston.....	758	26
Yorktown.....	380	24
Baltimore.....	1,145	60
San Francisco.....	628	33
Newark.....	800	28

As a remedy the author proposed that in cruising ships the bunkers below the protective deck be extended the breadth of the ship, but be divided in two by a fore and aft bulkhead amidships. A pair of bunkers, starboard and port, would thus take up all the space vertically between the protective deck and the inner bottom, and, longitudinally, between the athwartship water tight bulkheads. It is proposed that one pair be forward of the fire room and another between the en-

gine and fire rooms; or, in case there are two fire rooms, as is usual, and it is desired to add a third pair of bunkers, then between the two fire rooms. From their large size they would admit of rapid coaling, and from their position would be a great protection from raking fire either forward or aft. The paper then described and illustrated the appliances necessary for handling the coal.

A most valuable paper, profusely illustrated, on

Steel Ships of the United States Navy,

was prepared by Theodore D. Wilson, ex-Chief Constructor, U. S. N. He first described the principal features of the steel ships of the navy whose construction had been undertaken since 1883, and pointed out the differences and the reasons for the changes. Since the above date 43 vessels, of a total displacement of 180,478 tons, and two torpedo boats, have been added to or are being completed for the naval service.

In the class of torpedo gunboats, however, absolutely nothing has been accomplished; and when the marked development which this class of vessels has received in all foreign services is considered in connection with the great military value that may be given to these small and comparatively inexpensive vessels, their total absence from our fleet is greatly to be regretted. It is true that the construction of one vessel of this class has been authorized, but as the appropriation was insufficient, nothing has been done. The number of vessels of different types which have been built, when compared with those added to foreign services, show that we have a satisfactory proportion of cruising gunboats, but in battle ships and torpedo boats we are weak. With the material resources now available there is no longer any limitation to the results that may be accomplished other than that which the wisdom of Congress and the Executive may place upon the naval designer through the limitation of cost.

In conclusion the writer said:

"It is impossible to conclude this brief summary of the work accomplished toward the construction of a modern fleet without referring especially to the manner in which the private shipyards of the country have contributed to the success of the results obtained. When it is remembered that all but four of the new steel ships have been built by contract, the aid rendered the country by private shipbuilders will be appreciated, and higher praise to the thoroughness of their work cannot be given than is implied by the simple statement of fact that in no case has the contract speed of any vessel failed to be obtained on trial."

A paper on the "Comparative Performances of American and Foreign Freighting Ships," by W. W. Bates, late Commissioner of Navigation, United States Treasury Department, showed the superiority of both the iron and wooden boat of American construction in every particular. "Thoughts on the Design of New York Ferryboats" was the subject treated by Col. Edwin A. Stevens, president of the Hoboken Ferries. He mentioned the characteristics a ferryboat should possess, and then described the main features of the screw ferryboats and their peculiar adaptability to the service. Other papers presented were as follows: "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of Design of Steam Vessels," by J. J. O'Neill, 'naval

architect and marine engineer'; "The Wetted Surface of Ships," by D. W. Taylor, Naval Constructor, U. S. N.; "On the Law of Frictional Resistance," by Prof. W. F. Durand, Cornell University, and "Notes on the Machinery of the New Vessels of the United States Navy," by Engineer-in-Chief Geo. W. Melville.

Notes on the Imataca Iron Ore Range.

BY S. NORTON, HOKENDAUQUA, PA.

In order to call the attention of the furnace companies at the present time to a new iron ore range a person must be anything but a pessimist in his views in regard to the iron and steel business. The greater number of large and high grade ore bodies of the United States that are suitable for making steel are located around the shore of Lake Superior. We have, on the east of the Alleghenies, the Chateaugay, which by concentrating is without doubt the purest iron ore in our market. The cost is all that can be said against it. The Benson is a deposit of inexhaustible magnitude, but the ore must be concentrated. The same can be said of the Cranberry range. Port Henry and Crown Point are also able to produce a considerable quantity of Bessemer ore. There is also a quantity of carbonate iron ore of a good Bessemer grade in the Hudson River Valley. But none of these ores will work alone, neither will they together make a good working mixture; therefore it is necessary to bring ore from other parts to complete the mixtures.

There are only two points from which this ore can be derived; either it must come from the Lake Superior regions or from foreign lands. While it is possible, and not only possible but necessary, for Eastern furnaces making foundry iron to use Lake Superior ores with the cheap magnetic ores of local mines, when they come to the Bessemer steel business they have no cheap local ore to lower the cost of their mixtures in order to compete with Western steel manufacturers, who have fuel at a low cost and ore costing less by the amount of the freight. It becomes necessary for the Eastern furnaces to either find some cheaper ore or to give up the field to their Western brethren. Providence has kindly placed at their doors an iron ore range that is second to none on this earth.

Situated 54 miles from the mouth of the Orinoco and on a small arm of the same, and not more than 1500 feet from where vessels drawing 18 feet of water can come within 20 feet of the shore, sheltered from winds and in fresh water, is the Eastern end of an iron ore range that is only waiting for the hand of man to open it up. The quality of the ore is of the best. Enough of the ore has been shipped and used at Troy and Scranton to establish the quality of the ore. This ore was taken from what has since been found to be the small end of the deposit.

Explorations carried on to the west, or parallel to the Orinoco River, show that as the height of the hills increases the size of the ore bodies increases also, until at places the outcrop is from 100 feet to 300 feet wide; and as these explorations now extend over about 6 miles and each succeeding test trench to the westward shows more and more ore, and as we know that the ore is to be found at a point 35 miles beyond, we have, I think, good reasons to be-

lieve that there is at least 35 miles of an ore range. There are on the north slope of the hills, as far as I have been, thousands of tons of ore which have been worked down from the disintegrated vein matter. So that if I should do as many others do in describing the range, I would say that the outcrop was from 500 to 1000 feet wide. Still, this ore could be easily and cheaply won by any person who had ever seen how the brown hematites of Lehigh County, Pa., are prepared. As to the navigation of the Orinoco there is not the slightest trouble. We came out of the river in the night and the lowest water we found was 22 feet. In all the mining regions I never saw a place where a beginning could be made at so low a cost; in fact, the location is a perfectly ideal one, the only possible objection that can be made is that this great body of iron ore is on the Orinoco and not on the Delaware River. The whole region is a perfect wilderness and there are no restrictions in regard to importation of labor of any and all classes and no royalty, taxes or duty on anything to be used in carrying on the mining work. The concession requests the company to do the policing, and this I consider one of the most valuable considerations, as it practically gives the mining company the government of its own property.

There is also covered by the concession the trade of the Orinoco River. This by proper work could be made of great value, as the Orinoco River is navigable for 1200 miles, and this whole region is open for American trade, and would give return cargoes to vessels engaged in the transportation of the iron ore.

The Imataca iron ore range is very similar to the Cuban, and with these two regions open and furnaces and steel works at Norfolk and in reach of cheap coke, the United States could bid defiance to the world in cost and quality of pig iron and steel. There is no good reason, judging from the cost of mining in the Lake Superior regions of this same class of work, why this ore cannot be mined and placed on board vessel for 50 cents per ton. Transportation should not be more than \$1.50 per ton to the United States, as this would be more than the actual cost of the same class of work on our great lakes, and there would be this great advantage, that vessels could be employed the whole year and not lose the winter either in transportation or in carrying large stocks of ore; \$300,000 would be ample capital to open up the range to ship 15,000 to 20,000 tons per month, and \$1,500,000 would open up the mining and build vessels, and also open up the trade on the Orinoco River.

In working this body of ore it should be done by importing cheap Spanish, Italian or Coolie labor, as the conditions of the steel and iron business in this country make it necessary that they have cheap ore. To do this there must necessarily be used as miners the lowest priced labor that it is possible to procure. Coolie labor will be able to stand the climate and can live on rice and fish, with no expense for buildings, since only a roof is needed to keep off the rain. As the ore will for years be all mined in the open this class of labor will be the best.

The vessels used in transporting the ore should be sailed under the Swedish flag and manned by men of that nation. The wages of these would be less than one-half of what is paid for the same class by our lake steamers. This fact, coupled with the fact that steamers

could be employed the whole year instead of seven months, would, at a rate based on what has been paid from Two Harbors to Buffalo during the past summer, bring the cost of freight down to less than 90 cents per ton from Imataca to New York or Philadelphia. As we all expect the duty to be taken off, I see no reason why it is not possible with these facts before us to deliver ore at a price that steel can be made in the East.

Of a necessity there must be low wages at furnaces and mills in this country, but we must have iron and steel, and if we have to meet the world in the open market we must expect to pay less rather than more for the same work. "You cannot eat your cake and keep it too." These things must come or we must close our mills and furnaces and let others who will work for less do our work while we take a rest.

To the parties who have the necessary money and push there is not a better field. For a comparatively small amount of money there is a field for Yankee push and daring that must in the near future bring a rich harvest.

There is no iron made in Venezuela to my knowledge and there is no coal that is being worked. All the necessary materials are at hand at Imataca to make charcoal iron. There are thousands of acres of hard wood timber which can all be reached by water transportation on the hundred arms and inlets of the Orinoco, so that there are right here the ore and fuel with which cheap labor should make cheap charcoal pig iron.

There are also thousands of acres of the best sugar and coffee lands in the world, that are to be had by simply going in and possessing the land. All that is required is money and labor to make this one of the greatest wealth producing spots. I append analyses of Imataca ore:

Analyses of Imataca Iron Ore Taken from Points on the Range Over a Distance of 5 Miles.

	Fe.	Phos.	Mang.	Lime.	S.	Si.
1...	64.34	0.043	0.069	1.88	0.005	1.55
2...	66.67	0.0327	0.069	3.28	0.011	0.70
3...	67.06	0.056	0.085	2.61	0.023	0.53
4...	65.38	0.064	0.231	3.38	0.009	0.36

The Lyons Exhibition.

The main building for the international exhibition to be held next year at Lyons, France, will be a remarkable structure. From a description given in *Le Génie Civil* it appears that the building will consist of two practically distinct parts, a central dome like structure and a circular gallery running entirely round it. The dome will be 361 feet in diameter and formed by 16 parabolic half arches. These will be hinged at the bottom and each connected at the top to a circular crown. Each arch will act independently of the others. The roofs of the surrounding gallery will be carried by a peculiar form of a cantilever truss. The total weight of each main arch is stated to be 30.3 tons, and each roof truss of the galleries weighs 44 tons. The total weight of the iron work in the building will be about 2500 tons, and the area covered 9.4 acres, a trifle more than the annex to the Transportation Building at the Columbian Exposition.

The Chicago foundries whose owners failed during the summer have in but few cases been reorganized and put

in operation. The F. E. Roberts Company are still in the hands of an assignee and the works are closed. The Chicago Foundry Company have not resumed. The Chicago Iron Works are standing idle, with little hope of resumption by the old management. Turner & Dickinson's foundry is operated by a receiver, but the creditors are considering a plan of settlement, which may be accepted, restoring the property to the old firm. The Bouton Foundry Company, under an assignee, have finished up contracts on hand at the time of the failure and the works will be closed until a reorganization, now being considered, can be effected. The W. H. Chenoweth Company have arranged terms of settlement and will shortly resume control of their works. The Eureka Foundry of Wiltshire & Graf will be operated hereafter by Kolben Johnson, who formerly ran it.

Management of Men and Manufacturing Industries.

FIRST PAPER.

Elements for Consideration in Locating Manufacturing Enterprises.

BY THOS. D. WEST.

It very often becomes a serious question with contemplated enterprises where to locate their works. They are often solicited to settle here and there, and shown advantages until their heads fairly swim with bewilderment. And having themselves no definite reasons why they could not settle as well in one place as another, it is no wonder they are "all at sea," and the one giving them the most wind carries them to anchorage.

No enterprise should choose a location without being able to have a chart upon which they could knowingly write the advantages and disadvantages of any place which might be brought to their notice for consideration. To have logical reasons for locating there, and not at some other point, is one of the first essentials to giving confidence in sailing onward to success, and not becoming weak-kneed at the first squall that blows adversity; for those engaging in any new enterprise can make up their minds that they will have to weather many a storm before they can reach, by experience and good financial steering, an open port in which they can be secure from foundering.

No two enterprises can be said to require the same conditions to exist in choosing localities. What might be an advantage to one would be a disadvantage to another. There is much more in being able to foresee what elements should exist than there is in seeing what do. Often the most experienced are deceived in their first conceptions and opinions. After getting started or having the plant in operation they find that they had jumped too quick at conclusions and had not taken sufficient time for investigation and study of prevailing conditions and elements which would rise, interfere, injure and be detrimental to their business.

Before treating this subject further the writer will endeavor to classify as far as he can the different conditions and elements that generally should be weighed by experience and judgment

before contemplated enterprises are located. The first and in many cases the most important is: Good opportunity for procuring labor and knowledge concerning the character and training of the people where labor is expected to be obtained.

2. The advantages a locality may afford in the transportation of the concern's imports and exports.

3. Protection to life and property.

4. Cost of living and taxation.

5. The sphere there is for the enlargement of a plant.

This first proposition, that of procuring good labor in a new field, has often proved adverse to conceptions when labor came to be practically tested. Every industry has its own characteristic elements that demand from man an endurance and tax upon physical powers peculiar to and different from what some other line may call for. We find that one industry calls for spasmodic efforts of man. Another for constant steady labor—not one minute should they be idle. Then again we find industries calling for accuracy and neatness, while others require neither of such qualifications.

Still further on we see industries requiring men to withstand offensive odors and injurious dusts. Then we have those necessitating man to be standing or sitting in one position all day long. Also such as require him to endure all kinds of weather; and again we find him being required to withstand oppressive heat and flaming fires. It is often remarkable how men can be found "standing up to work" day after day that from observation or a short trial would by many be thought unbearable.

The lesson to be learned by study of the demands made upon a man's endurance in our different callings is that he can do most anything if only schooled and trained to it, but the trouble begins when we are required to do some labor foreign to what our endurance by actual experience has been trained to withstand. Of course, we have men that can conform readily to almost any kind of labor. As soon as they find some new muscles or sensibilities being made to pain or suffer they don't think they are going to die immediately. But men that will stick to labor that aches until their muscles become used to the work are scarce and far between. Any enterprise looking for a location should investigate very thoroughly the training men have had in the vicinity from which they expect chiefly to obtain their labor. For if they start in a vicinity where the schooling in endurance of labor differs radically from that which their industry demands, they can make up their minds to having much trouble and financial loss before they can procure and educate labor to profitably operate their plants. Heretofore this is a factor that has not had the attention it should have had. It has had, if the truth were only known, as much to do with strikes and failures in business as some other elements that might be mentioned. Every observing manager who has "knocked around" much will, I think, agree with the writer in saying that in changing localities he would be often deeply impressed how the little technicality and customs one place would think just right would at once cause dissension in some other locality. Therefore, to the interest of labor as well as capital it behooves the latter to use good reasoning in judging of labor in selecting its location and in the disciplining of it when first starting operations.

The Advantages a Locality May Afford in the Transportation of Imports and Exports

Means for any enterprise to figure out as far as possible what it would cost for freight or cartage of any raw materials or products it might require coming to its plant, and what it would cost to ship their finished product to contemplated customers. With enterprises intending to do a national business, the latter becomes a very important factor, for long railroad freights are a costly item, and all care in locating should be taken in figuring to avoid long hauls in freights to customers or their own plant, for oftentimes the imports or raw materials an enterprise may use in the manufacture of its product might cost more to be conveyed or shipped to its plant than its product would be to contemplated customers, and, other things being equal, it may often be much more advantageous to be located near to the section for obtaining the raw material than to the customers using the finished product.

Where a question of freights in imports or exports would be the most essential to be considered in locating, a good plan is to lay out a map, encircle by a mark the sections from which the raw materials are expected and trade to be catered for, and then locate nearest to the sections thought to be most advantageous in saving cost of freights.

Protection to Life and Property.

Manufacturing buildings going up at the present day are, as a general thing, being constructed as much fire proof as possible, and many buildings are all iron or brick and iron, and their owners care little for fire protection or insurance. If this can be done, it is certainly the wisest plan to adopt. But where it cannot be and fire protection is required, such should not be looked into after the buildings are up, as is the case many times. Enterprises locating within city limits are, as a general thing, fairly protected; but outside of such, and in villages and so forth, the protection against fire is generally very poor, and new enterprises should endeavor if at all possible to construct fire proof buildings. Another point which might be well to hint at is the question of floods. It is always well to figure to be high and dry. Protection to life is an element not to be overlooked, for all business must feel that it will be protected against ruffianism, drunkenness and theft. In cities aid can very soon be had to repel attacks or insults of this character, but in small towns, villages, and so forth, a man is generally left to defend himself, for the protection that may exist is generally so meager and out of sight it rarely can be found when wanted.

Cost of Living and Taxation.

These factors are also very essential to be investigated. If food, clothes and house rent are dear, a firm can safely figure that wages will be higher than in places where living is cheaper. As a general thing house rent is much cheaper in the smaller places and oftentimes food, but for clothes the cost is much less in the large towns and cities than in villages, and so forth. Taken as a whole the wage earner can live much cheaper in small towns, and so forth, than in large cities, and during business depressions is better taken care of when out of work in the small than in the large places, for the supply dealers are confined to a small territory for trade,

and as what is one man's business is generally everybody's business, the dealer fears the ill will of one man might seriously hurt his business. Hence he will let him have credit to a larger extent than could be obtained in a large city and take his chance for pay when the man returns to work. In regard to taxation little is to be said other than upon general principle, and that is, taxation is found much lighter in small than in large places.

Enlargements of Plants.

While this is a point that would be thought to be minor and sure to be provided for, yet it is astonishing the lack of foresight manifested by many firms in locating a plant. For had they at all figured on such, thousands of dollars could often have been saved by their locating in some other locality or building different. A new enterprise, in planning their works, should look ahead and figure so that if any enlargement is necessary after they get started half of their building will not have to be torn down to obtain what they desire. The condition can be but rare that would not permit original plans to be made of the largest plant that might be necessary, and in starting in only build as much of it as will assure sufficient room for a moderate business; and then, when a growing trade would demand more room, it can be constructed without destroying present building or causing a loss of time to manufacture.

The Advantages and Disadvantages of City and Village.

It would not be doing justice to say either one was the best for any contemplated enterprises. To decide such a question can only be done by taking into consideration the various elements herein cited, and if more points are found favorable to the village let it be accepted, but if the points are in favor of the city, why then let it have the preference. Each has its advantages and disadvantages, and if logical reasoning is only used a firm will not be misguided in their choice. A few elements yet exist that might be well discussed in regard to procuring labor in the city and village. In the village labor will be found much more characteristic in having established customs and habits than in cities, and any new industry that might call for characteristic elements different than those found in the locality in which, for other reasons, they would like to locate, they can make up their mind that if they start in they will have much trouble and expense before they get their labor to the proficiency they would desire. In a large city the lines of habit and custom are not so clearly drawn, and there is a large body of labor to draw from, so that a firm can much quicker obtain the characteristic element they need to best suit their requirements of manufacture, and, of course, in the matter of obtaining supplies for repairs, and so forth, and chances for communication with the outer world by mail, wire or telephone, the city has many advantages over the village. In starting any enterprise every possible advantage should be taken. To be well located means that half the battle to win success is fought. Too much care and judgment cannot be exercised in choosing a locality, and if the reconnoiter, in starting out, will but keep in the files of his memory the factors, characteristic requirements for labor, transportation, protection to life and

property, cost of living, and taxation and accommodation obtainable in matter of supplies, mail, telephone and telegraph, he cannot make any very serious mistake in selecting a locality which in after years experience will surely have proved to be a good locality.

The Tariff Bill.

(From our Special Correspondent.)

WASHINGTON, D. C., November 22, 1893.

The draft of the new tariff bill on purely revenue lines is before the majority of the Committee on Ways and Means. The Sub-Committee on Customs, consisting of Wilson, Bynum, Breckenridge, Stevens and Tarsney, has concluded its portion of the work, subject to revision.

It is now proposed to lay the bill before the minority on next Friday, if possible, in order to give them the full ten days required by the resolution authorizing the bill, when completed, to be handed to the clerk of the House for printing. The majority are by no means in accord on the customs provisions and are worse divided on sugar and income tax.

Notwithstanding the protests from influential quarters, coal and iron ore have been placed upon the free list. Pig iron and scrap iron are reduced to $\frac{2}{10}$ cent per pound instead of $\frac{3}{10}$. Throughout the metal schedule the rates are below those of the act of 1883, and range from 25 to 40 per cent. lower than the existing rate. Railway bars of iron or steel or in part of iron and steel and T-rails and punched iron or steel flat rails, under the law of 1883 at $\frac{3}{10}$ and $\frac{2}{10}$ cent per pound, had a reduction in the act of 1890 to $\frac{2}{10}$ cent per pound. It is now proposed to further reduce them to $\frac{1}{10}$ cent per pound. All iron or steel sheets or plates, &c., coated with tin, &c., are placed at 1 instead of 2 $\frac{2}{10}$ cents a pound.

The cardinal principle of the bill as prepared is revenue only, and therefore for the encouragement of importations to the utmost extent without reference to the interests of home manufacturers or wage workers.

It does not seem possible that such a measure can even pass the House. It will certainly meet with decided opposition in that body. In the Senate 11 Democrats voted against a less objectionable bill on a former occasion, and a sufficient number, it is claimed, can be relied upon to prevent too radical legislation now.

The rough draft which has been prepared is, however, still subject to modification.

An international exhibition of foods, showing the means of provisioning armies, means of communication, saving of life, &c., combined with a special sportsman exhibition, will be held in Vienna from April 20 to June 10, 1894. The latter feature will embrace sporting goods of all kinds. Further particulars can be obtained on application to the Exhibition Office, Austellung's Amt, Minoxitenplatz 4, Vienna, Austria.

Continued inactivity in the iron mines of the Gogebic range has brought great suffering on the people of that section. No less than 20,000 persons are said to be reduced to the verge of starvation, and relief measures have been started for their benefit.

The "Columbia"

That the latest of our cruisers should be of such phenomenal speed and also so felicitously named is gratifying to every American whose patriotism is normal. The mere contemplation of the fact that both ship and machinery are wholly of domestic material and make, and that the design and workmanship are unexcelled, if not unrivaled, the world over, should make our people proud and our steel makers glad, for in this vessel there is a greater percentage of steel used than in any previous American ship of great power. With this material it has been possible to so proportion the parts as to produce a remarkably light and beautiful set of engines, and which scarcely appear to

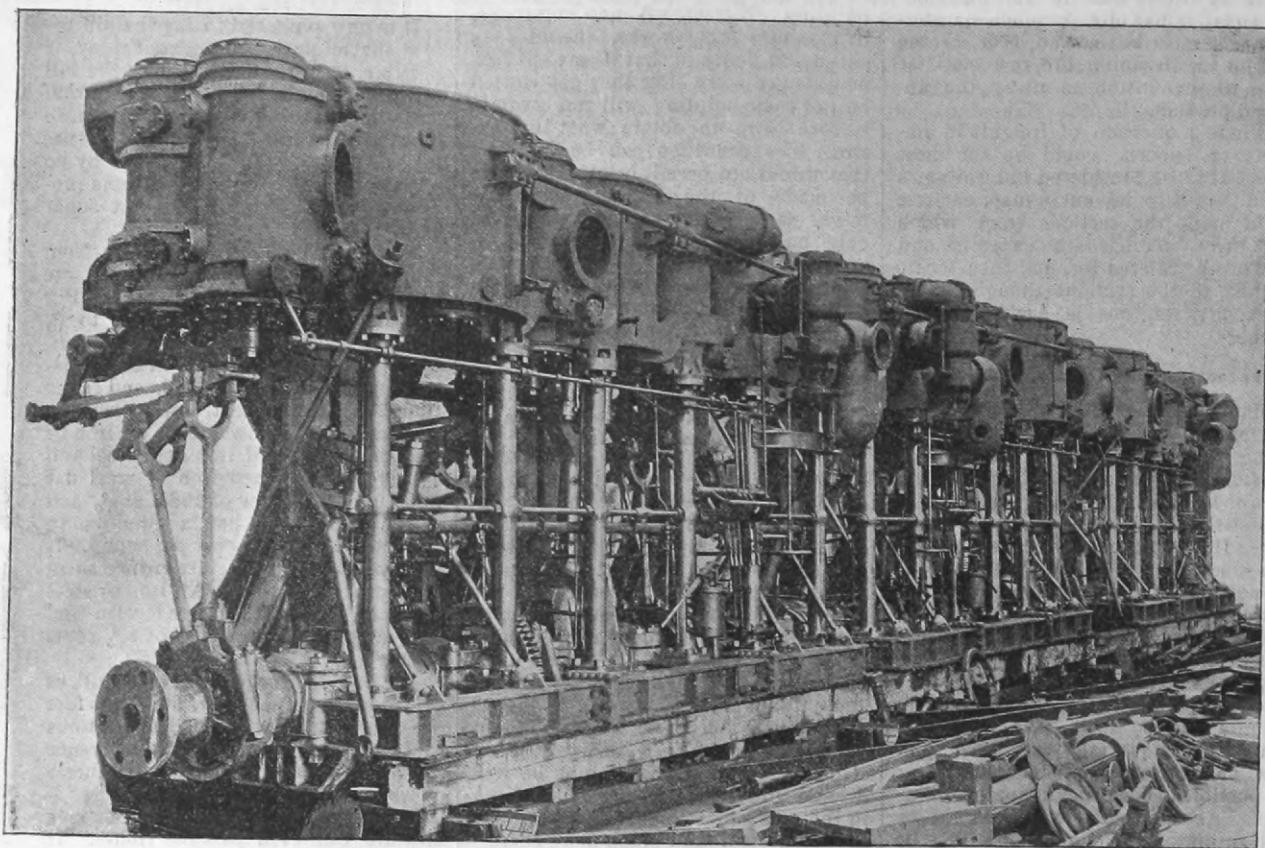
The intermediate and low pressure cylinders are steam jacketed. The pistons are of cast steel and conical. All main valves are of the piston type. The reversing gear is of the bar link type. The shafting is hollow steel (forged), 16 inches diameter, with an axial hole 6 inches in diameter. The crank pins are 17 inches diameter and 21 inches long. The connecting rods are 7 feet from center of cross head to center of crank pin, and weigh, with brasses and caps, 6500 pounds each. The main cross head guides are entirely on the back housing, the backing guides being bolted to the main guides and overlapping the sides of the cross head sliders. The latter are of manganese bronze. The screw propellers also are of this metal, and have a pitch of 21 feet 6 inches, the center screw being 14

from a photograph taken when erected in the shops.

Official Trial of the "Columbia."

The wonderful speed made by the "Columbia" in her official trial last Saturday is received with pleasure throughout the entire country. That she would exceed the 21 knots an hour called for by the terms of the contract was expected by all; that she would maintain an average speed of 22.81 knots an hour and thereby earn for her builders the sum of \$350,000 was at least hoped for; but that she would in a spurt of 7½ knots attain a speed of 25.31 knots per hour was unexpected even by those most familiar with the design.

The trial was made off Cape Ann, the course being marked by Govern-



ENGINES OF THE "COLUMBIA"

be of half the power they actually are to the eyes of those who are used to seeing the massive framings of cast iron usual to marine work.

The adoption of forged steel front columns and single housings, in lieu of the clumsier looking double housings, is the most striking feature of the design with the possible exception of the slender steel bed plates, which contrast so strongly with the greatly heavier iron castings of the ordinary construction.

Full descriptions of these engines have been repeatedly published, and it is only necessary here to give such brief details as may interest metal workers and designers; and as each of the three sets of engines is identical in every respect, what is said of one applies to all.

The diameters are 42, 59 and 92 inches for the high, intermediate and low pressure cylinders respectively, and the common stroke is 42 inches, the piston speed being about 950 feet per minute.

feet in diameter, while the two side screws are 15 feet.

The main steam pipes are of lap welded steel, 20 inches in diameter and ⅜ inch thick.

There are eight main double ended boilers, made of steel throughout. Their shells are over 1½ inches thick and have a diameter of 15 feet 6 inches and a length of 18 feet. Their average weight being about 70 tons each, empty, as shown in the view here presented, while with contained water and necessary fittings their total weight is about 1000 tons, or more than half the weight of the entire machinery, in which, of course, they are included. One of the most important features is the sufficiency of these boilers, they being capable of producing, without any great forcing, more steam than the engines can use, thus insuring protracted efficiency, as the general decrease in speed of ships after years of service results from boiler deterioration and lack of steam producing power.

The view of the engines here given is

ment vessels. The cruiser ran north and then turned and came back over the same course. The following table gives the speed and time between each station:

The Run North.

Station vessels.	Distance in nautical miles.	Elapsed time. M. S.	Speed in knots.
"Dolphin".....	0.00	.. ..	.. ..
"Irwana".....	2.37	6 18	22.65
"Kearsarge".....	6.66	18 04	22.11
"Leyden".....	6.66	17 18	23.10
"Fern".....	6.4	18 16	23.55
"Narkeeta".....	6.4	17 18	22.22
"Fortune".....	7.74	21 36	21.63
"Vesuvius".....	7.74	18 18	25.31

Elapsed time, 1 hour 55 minutes 7 seconds to cover a distance of 43.97 miles, giving an average of 22.92 knots for one-half the course.

The Run South.

Station vessels.	Distance in nautical miles.	Elapsed time. M. S.	Speed in knots.
"Vesuvius".....	0.00	.. ..	.. ..
"Fortune".....	7.74	18 45	24.77
"Narkeeta".....	7.74	22 00	21.11
"Fern".....	6.4	17 45	21.64
"Leyden".....	6.4	16 11	23.77
"Kearsarge".....	6.66	17 24	22.96
"Irwana".....	6.66	17 53	22.71
"Dolphin".....	2.37	6 17	22.70

Elapsed time, 1 hour 56 minutes and 17 seconds to cover a distance of 43.97 miles, giving an average of 22.7 knots. Run north, 22.92 knots. Run south, 22.70 knots. Average for both runs, 22.81 knots.

That the "Columbia" will be able to capture any vessel now afloat she may desire to, and that she will be able to assume any desired position—fight or keep at a distance, according to the strength of her opponent—appear to be conclusively proved by her trial.

Changes in the Scale.

The second convention of the Amalgamated Association held in Pittsburgh this year met in that city on Thursday morning, the 16th inst., the session closing on Friday night at midnight. About 125 delegates from different sections of the country were in attendance, and some material reductions in the wage scale for 1893-94 were made. As already noted, this is the first time in its history that the Amalgamated Association has met in regular conference twice in the same year, but owing to the unsettled condition of the labor market and also to the fact that the mill owners in the Mahoning Valley

no changes in the scale in convention, but instead, these three committees were given full power to act. After the disposal of some routine business the convention adjourned.

On Saturday the Committee on the Boiling Scale met the Valley manufacturers in conference in Youngstown, and after two sessions lasting some hours each, the request of the manufacturers for a \$4.50 boiling rate was compromised and \$4.75 as the price of boiling was adopted, with the usual advance of 10 cents per ton for every advance of $\frac{1}{16}$ cent per pound in the selling price of iron. The base of the scale was also changed from 2 cents to $1\frac{1}{2}$ cents, but it should be here noted that the scale is in force only until April 1, 1894, and in the meantime the question of making the scale a perpetual one will be submitted to the sub lodges of the Amalgamated Association for consideration. In case it should be decided by the lodges to have the scale a perpetual one, only to be changed by three months' notice from either side, then it is likely that

Steel Workers signed by some of the Valley mills two weeks before. This scale in full is as follows:

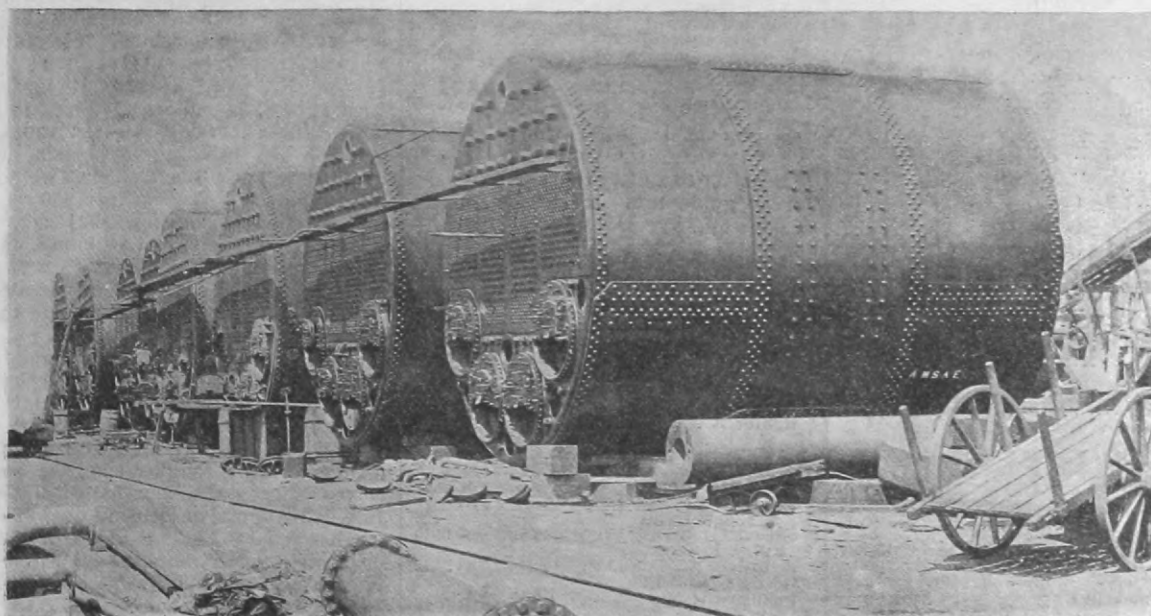
Bar and Nail Plate Mills.

Western Iron Association card rates.	Bar rolling and heating, 2240 per ton.
Bar iron.	
15-10 cents.....	\$0.56 $\frac{3}{4}$
16-10 cents.....	.58
17-10 cents.....	.59 $\frac{1}{4}$
18-10 cents.....	.60 $\frac{1}{2}$
19-10 cents.....	.61 $\frac{3}{4}$
2 cents.....	.63

1. All sizes below $1\frac{1}{2} \times \frac{1}{2}$ inch flats, 1 inch rounds and $\frac{7}{8}$ -inch squares when worked on a bar mill to be paid for at guide mill prices. One inch rounds when worked by hand on a bar mill shall be paid for at guide mill prices.

2. All sizes below $1\frac{1}{2} \times \frac{1}{2}$ inch flats, 1 inch rounds and $\frac{7}{8}$ -inch squares when worked on a 12-inch mill to be paid for at guide mill prices. One inch rounds when worked by hand on a 12-inch mill shall be paid for at guide mill prices.

3. Catching on a bar mill shall be five-eighths of the price paid for rolling on a bar mill.



BOILERS OF THE "COLUMBIA."

and other points in Western Ohio had arranged a scale with the National Union of Iron and Steel Workers, a rival labor organization, thus ignoring the Amalgamated Association, it was deemed advisable to hold another convention, and, if possible, make such changes in the scale as would induce the manufacturers to sign it and continue to recognize the Amalgamated Association. After the delegates had formally assembled, President M. M. Garland made a lengthy statement, in which was set forth the reasons for calling the delegates together for the second time within a year. Three committees were then appointed to represent the different departments of the scale in which it was proposed to make changes. One of these committees was to consider the request of the Valley manufacturers for a reduction in the price of boiling from \$5 to \$4.50 per ton, another to represent the finishing departments of the scale and the third to act upon the request of the members of the Association of Iron and Steel Sheet Manufacturers for a reduction of 10 per cent. in the sheet scale. At the Friday session it was decided to make

the base price of boiling will remain at $1\frac{1}{2}$ cents. If the decision is against the perpetual scale then it is probable that the base price will be changed back to 2 cents. In the foot notes following the boiling scale, paragraphs 7, 9 and 12 were changed to read as follows:

7. For cast iron swarth worked on cinder bottom the price per ton shall be \$4.50.

9. For wrought iron turnings, worked on cinder bottom, \$3.09 per ton; the price for working turnings to advance and decline in the same proportion as the boiler's scale.

12. For all light scrap worked alone in a boiling furnace the same price, (\$3.09) shall be paid as that for working wrought iron turnings; this to cover hoop No. 19 and lighter, wire No. 5 and lighter, sheet, and what is known as Norway scrap; this scrap to be cut from eight (8) to ten (10) inches in length for charging.

Immediately after the settlement of the boiling scale had been effected the finishing departments were taken up, and it was finally decided to adopt the scale of the National Union of Iron and

4. Heating nail plate to be the same price as bar mill heating.

5. Heaters on 12-inch mill to receive bar mill prices, to be paid by the company.

6. On all bar mills working bar or skelp iron one man's help shall be furnished by the firm on piles of 150 pounds and over, and an additional man for 250 pounds to shove under at the rolls on all passes. This shall not apply to mills now giving extra help.

Guide, 10-Inch, Hoop and Cotton Tie Mills.

It is agreed that the base price at a $1\frac{5}{16}$ cents Western Iron Association's card shall be the straight \$1.17 $\frac{1}{2}$ per ton for rolling, 58 $\frac{1}{2}$ cents for heating, and 29 $\frac{3}{4}$ cents each for roughing and catching iron or steel on a guide, 10-inch, hoop or cotton tie mill, with 2 per cent. additional for each $\frac{1}{16}$ advance on said card from $1\frac{5}{16}$ to $2\frac{5}{16}$ cents card, and for each $\frac{1}{16}$ advance or decline above the $2\frac{5}{16}$ cents card 3 per cent. shall be added or deducted, as the case may be. The roller, heaters, roughers and catchers shall each be paid by the company. It is understood, however, that

this arrangement shall in no way detract from the authority of the roller in controlling all bands on mill, including hiring and discharging, and, as heretofore, the roller shall be held responsible for the work done.

Sizes.	Roller.	Heater.	Rougher and catcher.
Rounds and squares:			
3-16.....	\$3.84 $\frac{3}{4}$	\$1.92 $\frac{3}{4}$	\$0.96 3-16
7-32.....	3.09	1.54 $\frac{1}{2}$	.77 $\frac{1}{4}$
1-4.....	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
9-32.....	2.08 $\frac{1}{2}$	1.04 $\frac{1}{4}$	.52 $\frac{1}{2}$
5-16.....	1.78 $\frac{1}{2}$	.89 $\frac{1}{4}$	.44 9-16
$\frac{3}{8}$ and 7-16.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
15-32.....	1.35 $\frac{1}{4}$	.67 $\frac{3}{4}$	.33 15-26
$\frac{1}{2}$ and 9-16.....	1.29 $\frac{1}{2}$	.64 $\frac{3}{4}$	.32 $\frac{3}{4}$
$\frac{1}{2}$ and up.....	1.17 $\frac{1}{2}$	.58 $\frac{3}{4}$	.29 $\frac{3}{4}$
Oval:			
$\frac{1}{2}$ and 9-16 x 3-16.....	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
$\frac{3}{8}$ and 7-16.....	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
$\frac{1}{2}$ and 9-16.....	1.66	.83	.41 $\frac{1}{2}$
$\frac{3}{8}$ x $\frac{1}{2}$	3.44 $\frac{1}{2}$	1.72 $\frac{1}{2}$	.86 $\frac{1}{2}$
$\frac{1}{2}$	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{3}{4}$ and up.....	1.17 $\frac{1}{2}$	.58 $\frac{3}{4}$	.29 $\frac{3}{4}$
Half oval:			
$\frac{3}{8}$	3.60 $\frac{1}{2}$	1.80 $\frac{1}{4}$	.90 $\frac{1}{2}$
$\frac{1}{2}$	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
$\frac{3}{8}$	1.66	.83	.41 $\frac{1}{2}$
$\frac{1}{2}$	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{3}{4}$	1.17 $\frac{1}{2}$	.58 $\frac{3}{4}$	.29 $\frac{3}{4}$
Half round:			
5-16.....	3.84 $\frac{3}{4}$	1.92 $\frac{3}{4}$	.96 3-16
$\frac{3}{8}$	3.60 $\frac{1}{2}$	1.80 $\frac{1}{4}$	.90 $\frac{1}{2}$
$\frac{1}{2}$	1.66	.83	.41 $\frac{1}{2}$
$\frac{3}{4}$	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16

Nut Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
5-16 x $\frac{1}{4}$	\$2.39	\$1.19 $\frac{1}{2}$	\$0.59 $\frac{3}{4}$
23-64 x $\frac{1}{4}$	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
27-64 x $\frac{1}{4}$ and 1-16.....	5.06 $\frac{1}{4}$	2.53 $\frac{1}{2}$	1.26 9-16
$\frac{3}{8}$ x $\frac{1}{2}$ and 1-16.....	5.06 $\frac{1}{4}$	2.53 $\frac{1}{2}$	1.26 9-16
27-64 x 9-64.....	4.05	2.02 $\frac{1}{2}$	1.01 $\frac{1}{4}$
$\frac{3}{8}$ x $\frac{1}{4}$ to 3-16.....	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
7-16 x $\frac{1}{4}$	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
11-32 x $\frac{1}{4}$	1.90 $\frac{1}{4}$	.95 $\frac{1}{2}$	.47 9-16
$\frac{1}{2}$ x $\frac{1}{4}$	1.80 $\frac{1}{4}$	.90 $\frac{1}{2}$	.47 9-16
17-32 x $\frac{1}{4}$	1.84 $\frac{1}{4}$	.92 $\frac{1}{2}$	.46 1-16
9-16 x $\frac{1}{4}$	1.78 $\frac{1}{4}$	.89 $\frac{1}{2}$	.44 9-16
19-32 x $\frac{1}{4}$	1.72	.86	.46
$\frac{3}{8}$ x 5-16.....	1.54	.77	.38 $\frac{1}{2}$
11-16 x 5-16.....	1.54	.77	.38 $\frac{1}{2}$
13-16 x $\frac{3}{8}$	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
21-32 x 3-16.....	1.60	.78	.39
23-32 x 3-16.....	1.47 $\frac{1}{4}$	.73 $\frac{1}{2}$	.36 15-16
$\frac{3}{4}$ x $\frac{3}{8}$ to 3-16.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
25-32 x 3-16.....	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 13-16
13-16 x 3-16.....	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
$\frac{3}{8}$ x 3-16 to $\frac{3}{4}$	1.29 $\frac{1}{2}$	.64 $\frac{3}{4}$	.32 $\frac{3}{4}$
15-16 x 3-16.....	1.23 $\frac{1}{2}$	.61 $\frac{3}{4}$	.30 $\frac{3}{4}$
On 3-high grooved rolls:			
$\frac{1}{2}$ to $\frac{3}{8}$ x 3-16 to $\frac{3}{4}$	1.66	.83	.41 $\frac{1}{2}$
9-16 x $\frac{1}{4}$	1.66	.83	.41 $\frac{1}{2}$
1 x 3-16 and up.....	1.17 $\frac{1}{2}$	.58 $\frac{3}{4}$	.29 $\frac{3}{4}$

Channel Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
2 inches and upward.....	\$1.17 $\frac{1}{2}$	\$0.58 $\frac{1}{2}$	\$0.29 $\frac{3}{4}$
$\frac{1}{2}$ to $\frac{3}{8}$	1.2-1 $\frac{1}{2}$	.64 $\frac{1}{2}$	.32 $\frac{3}{4}$
1 inch.....	1.41 $\frac{1}{2}$	.70 $\frac{1}{2}$	.35 7-16
$\frac{3}{8}$ x $\frac{3}{8}$	1.54	.77	.38 $\frac{1}{2}$
$\frac{3}{8}$ x 5-16.....	2.02 $\frac{1}{2}$	1.01 $\frac{1}{4}$	.50 $\frac{1}{2}$
$\frac{3}{8}$ x 5-16.....	3.84 $\frac{3}{4}$	1.92 $\frac{3}{4}$	.96 3-16
$\frac{3}{4}$ x 5-16.....	3.11 $\frac{1}{2}$	1.55 $\frac{1}{2}$	.77 15-16
$\frac{3}{8}$ x $\frac{3}{8}$	1.66	.83	.41 $\frac{1}{2}$
$\frac{3}{4}$ x $\frac{3}{8}$	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
All channel, No. 10 and lighter, shall be paid for at hoop prices.			

"T" Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{1}{2}$ and upward.....	\$1.29 $\frac{1}{2}$	\$0.64 $\frac{1}{2}$	\$0.32 $\frac{3}{4}$
$\frac{1}{4}$	1.66	.83	.41 $\frac{1}{2}$
$\frac{1}{2}$	1.90 $\frac{1}{4}$	.95 $\frac{1}{2}$	.47 9-16
1 inch.....	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
$\frac{3}{8}$	2.75 $\frac{1}{2}$	1.37 $\frac{1}{2}$	.68 $\frac{1}{2}$
1 x $\frac{3}{4}$	2.75 $\frac{1}{2}$	1.37 $\frac{1}{2}$	.68 $\frac{1}{2}$
$\frac{1}{4}$ x $\frac{1}{2}$ Y steel.....	1.6	.83	.41 $\frac{1}{2}$

1. Y-steel, 10 per cent. extra for cut lengths.

2. That any tees of unequal size should be classed thus, 1 x $\frac{3}{4}$ shall be classed as $\frac{3}{4}$ tees.

Angles.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{1}{4}$ and upward and $\frac{1}{4}$ x 3-16.....	\$1.17 $\frac{1}{2}$	\$0.58 $\frac{1}{2}$	\$0.29 $\frac{3}{4}$
$\frac{1}{4}$ x 3-16, two-high roll.....	1.21 $\frac{1}{2}$	.60 $\frac{1}{2}$	.30 $\frac{1}{2}$
$\frac{1}{2}$ x 3-16.....	1.47 $\frac{1}{4}$	.73 $\frac{1}{2}$	.36 15-16
1 x $\frac{1}{2}$	1.66	.83	.41 $\frac{1}{2}$
$\frac{3}{8}$ x $\frac{1}{2}$	1.90 $\frac{1}{4}$	.95 $\frac{1}{2}$	.47 9-16
$\frac{1}{2}$ x $\frac{1}{2}$	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
$\frac{3}{4}$ x $\frac{1}{2}$	2.75 $\frac{1}{2}$	1.37 $\frac{1}{2}$	.68 $\frac{1}{2}$

1. All angles under $\frac{1}{4}$ in thickness, 10 per cent. advance on above prices.

2. All angles of unequal sides shall

be divided; for instance, $1\frac{1}{2}$ x 1 inch shall be classed with $1\frac{1}{2}$ angle.

Clip and Wagon Strap.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{5}{8}$	\$1.20 $\frac{1}{2}$	\$0.64 $\frac{1}{2}$	\$0.32 $\frac{3}{4}$
9-16.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{1}{2}$	1.51	.77	.38 $\frac{1}{2}$
7-16.....	1.66	.83	.41 $\frac{1}{2}$
$\frac{3}{8}$	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
5-16.....	2.87 $\frac{1}{4}$	1.43 $\frac{1}{2}$	.71 $\frac{1}{4}$
$\frac{1}{4}$	3.60	1.80	1.80

Hame Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{5}{8}$ x No. 10 and lighter.....	\$3.84 $\frac{3}{4}$	\$1.92 $\frac{3}{4}$	\$0.96 $\frac{3}{4}$
$\frac{3}{4}$ x No. 10 and lighter.....	3.11 $\frac{1}{2}$	1.55 $\frac{1}{2}$	.77 15-16
$\frac{3}{8}$ x No. 10 and lighter.....	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
Bands rolled specially for bundling.....			
	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$

Ten-Inch Mill.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{1}{2}$ and 9-16 rounds and squares.....	\$1.29 $\frac{1}{2}$	\$0.64 $\frac{1}{2}$	\$0.32 $\frac{3}{4}$
$\frac{3}{8}$ and upward rounds & squares.....	1.17 $\frac{1}{2}$	.58 $\frac{1}{2}$	.29 $\frac{1}{2}$
$\frac{3}{8}$ ovals.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{3}{4}$ ovals and upward.....	1.17 $\frac{1}{2}$	.58 $\frac{1}{2}$	.29 $\frac{1}{2}$
$\frac{3}{4}$ x $\frac{3}{8}$ to 3-16.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{3}{8}$ x $\frac{1}{4}$ to 3-16.....	1.23 $\frac{1}{2}$	.63 $\frac{1}{2}$	.32 $\frac{1}{2}$
1 inch and upward.....	1.17 $\frac{1}{2}$	.58 $\frac{1}{2}$	.29 $\frac{1}{2}$
$\frac{1}{4}$ and upward hoop by $\frac{1}{8}$	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
$\frac{1}{4}$ and upward No. 15.....	1.17 $\frac{1}{2}$	.58 $\frac{1}{2}$	.29 $\frac{1}{2}$
Lighter than No. 15.....	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
Bands rolled specially for bundling.....			
	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
Billets.....	1.17 $\frac{1}{2}$	.58 $\frac{1}{2}$	.29 $\frac{1}{2}$

Billets 9-16 and lighter shall be paid for at guide mill prices and no percentage off.

Hoop and Cotton Tie Mills.

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{1}{2}$ and upward to No. 15.....	\$1.17 $\frac{1}{2}$	\$0.58 $\frac{1}{2}$	\$0.29 $\frac{1}{2}$
Lighter than No. 15.....	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
$\frac{1}{4}$ milk can hoops.....	1.66	.83	.41 $\frac{1}{2}$
$\frac{1}{4}$ No. 10 and lighter.....	1.35 $\frac{1}{4}$	.67 $\frac{1}{2}$	.33 15-16
$\frac{1}{2}$ and $\frac{3}{8}$, No. 10 and lighter.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
$\frac{1}{2}$ ratelot iron.....	1.51	.77	.38 $\frac{1}{2}$
$\frac{1}{4}$ and $\frac{1}{2}$, No. 10 and lighter.....	1.66	.83	.41 $\frac{1}{2}$
1 x Nos. 10 to 12, inclusive.....	1.71 $\frac{1}{4}$	.85 $\frac{1}{2}$	.42 15-16
$\frac{3}{8}$ x Nos. 10 to 12, inclusive.....	1.91 $\frac{1}{4}$	.95 $\frac{1}{2}$	.47 13-16
13-16 x Nos. 10 to 12, inclusive.....	2.20 $\frac{1}{4}$	1.10 $\frac{1}{4}$	.56 $\frac{1}{2}$
$\frac{3}{4}$ x Nos. 10 to 12, inclusive.....	2.49 $\frac{1}{4}$	1.24 $\frac{1}{4}$	.62 $\frac{1}{2}$
11-16 x Nos. 10 to 12, inclusive.....	2.61 $\frac{1}{4}$	1.30 $\frac{1}{4}$	.65 5-16
$\frac{3}{8}$ x Nos. 10 to 12, inclusive.....	2.88 $\frac{1}{4}$	1.44 $\frac{1}{4}$	.72 $\frac{1}{2}$
9-16 x Nos. 10 to 12, inclusive.....	3.25	1.62 $\frac{1}{2}$	.81 $\frac{1}{4}$
$\frac{1}{2}$ x Nos. 10 to 12, inclusive.....	3.79 $\frac{1}{4}$	1.89 $\frac{1}{4}$	.94 15-16
$\frac{3}{8}$ x Nos. 10 to 12, inclusive.....	5.46 $\frac{1}{4}$	2.73 $\frac{1}{4}$	1.36 11-16
Clips.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
Slats.....	1.66	.83	.41 $\frac{1}{2}$
Finger.....	1.41 $\frac{3}{4}$	.70 $\frac{3}{4}$	.35 7-16
Cotton tie.....	1.66	.83	.41 $\frac{1}{2}$
1 x No. 13 and lighter.....	2.14 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.53 11-16
$\frac{3}{8}$ x No. 13 and lighter.....	2.38	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
$\frac{1}{4}$ x No. 13 and lighter.....	3.11 $\frac{1}{2}$	1.55 $\frac{1}{2}$	.77 15-16
$\frac{3}{8}$ x No. 13 and lighter.....	3.84 $\frac{3}{4}$	1.92 $\frac{3}{4}$	.96 3-16
13-16 x No. 13 and lighter.....	2.75 $\frac{1}{2}$	1.37 $\frac{1}{2}$	.68 $\frac{1}{2}$
11-16 x No. 13 and lighter.....	3.48 $\frac{1}{4}$	1.74 $\frac{1}{4}$	.87 1-16
9-16 x No. 13 and lighter.....	4.33 $\frac{1}{4}$	2.16 $\frac{1}{4}$	1.08 5-16
$\frac{1}{2}$ x No. 13 and lighter.....	5.06 $\frac{1}{4}$	2.53 $\frac{1}{4}$	1.26 9-16
$\frac{3}{8}$ x No. 13 and lighter.....	7.29	3.64 $\frac{1}{2}$	1.82 $\frac{1}{4}$

All half ovals below regular gauge, one-quarter the thickness of its width, shall be paid for as follows, the same to advance and decline as per regular sale:

Sizes.	Roller.	Heater.	Rougher and catcher.
$\frac{3}{8}$	\$4.45 $\frac{1}{4}$	\$2.22 $\frac{1}{4}$	\$1.11 $\frac{1}{4}$
$\frac{1}{2}$	4.25 $\frac{1}{4}$	2.12 $\frac{1}{4}$	1.06 5-16
$\frac{3}{4}$	3.44 $\frac{1}{4}$	1.72 $\frac{1}{4}$	.86 1-16
$\frac{1}{2}$	2.39	1.19 $\frac{1}{2}$	.59 $\frac{3}{4}$
$\frac{3}{8}$	2.02 $\frac{1}{2}$	1.01 $\frac{1}{4}$	.50 $\frac{1}{2}$

NOTES.

1. The price for rolling cotton ties out of muck billets and $1\frac{1}{4}$ -inch and lighter soft steel billets shall be \$1.36 per ton, heating 68 cents per ton, roughing and catching, each 34 cents per ton. But when so using muck billets during the three summer months—June, July and August—the company shall pay heater's helper at the cotton tie furnace, and an extra rougher and catcher at the cotton tie rolls; that is, one man at the rolls who shall assist both rougher and catcher.

2. All sizes made from a regular 2-inch and lighter reworked billet made from all muck iron; and on all products except cotton ties made from $1\frac{1}{4}$ and lighter soft steel billets, 20 cents per ton for rolling, 10 cents for heating, 5 cents per ton for roughing and catching less than the above prices.

3. For cut hoops, No. 10 and lighter, the following extras shall be paid: Rolling, 12 cents; heating, 6 cents; roughing, 3 cents, and catching, 3 cents per ton.

4. Lightning rod, $\frac{1}{8}$ and No. 5, or all sizes weighing from 62 to 70 pounds per 250 feet, rolling, \$2.82 $\frac{1}{4}$; heating, \$1.14 $\frac{1}{4}$; roughing, 70 $\frac{1}{2}$ cents, and catching, 70 $\frac{1}{2}$ cents per ton; 11, $\frac{3}{8}$ and No. 4, or all sizes weighing from 71 to 85 pounds per 250 feet, rolling, \$2.02 $\frac{1}{4}$; heating, \$1.04 $\frac{1}{4}$; roughing, 50 $\frac{1}{2}$ cents, and catching, 58 $\frac{1}{2}$ cents per ton; $\frac{3}{8}$ Nos. 2 and 3, and all sizes weighing 86 pounds and over per 250 feet, rolling, \$1.84 $\frac{1}{4}$; heating, 92 $\frac{1}{2}$ cents; roughing, 46 $\frac{1}{2}$ cents, and catching, 46 $\frac{1}{2}$ cents per ton.

5. Any smaller sizes not enumerated in the 10-inch scale

different sides of the case were exhaustively argued by the respective sides, but without result. Present indications point to a struggle between a number of the sheet manufacturers and the Amalgamated Association. On the authority of Secretary John Jarrett it can be stated that an agreement has been entered into and signed by the sheet manufacturers in which they bind themselves not to accept orders for future delivery, and in all probability a number of the mills will be closed down at an early date, and when operations are resumed it will be with non-union labor. Three concerns have adopted this course and are now operating their plants with non-union men. These are the Apollo Iron & Steel Company of Pittsburgh, Kirkpatrick & Co., also of Pittsburgh, whose mills are located at Leechburg, Pa., and Britton Iron & Steel Company of Cleveland, Ohio. In case the workmen desire to have another conference with the manufacturers it will be granted by them, but it is stated that under no circumstances will the manufacturers ask for another meeting with the Conference Committee representing the Amalgamated Association.

PERSONAL.

B. J. Arnold, formerly with the General Electric Company, and consulting engineer of the Columbian Intramural Railway Company, has opened an office as consulting and constructing electrical engineer at The Rookery, Chicago.

After seven years of successful service as the superintendent of the Pullman Iron & Steel Company, Pullman, Ill., Samuel Job tendered his resignation, which is to take effect at once.

C. McKinney, recently of the Maryland Steel Company, Sparrow's Point, Md., has been appointed general manager of the rail mill department of the Lackawanna Iron & Steel Company, Scranton, Pa. Henry Wehrum of Scranton was made general superintendent.

J. D. Carey, president of the National Union of Iron and Steel Workers, has taken the position of heater at the plant of the Mahoning Valley Iron Company, Youngstown, Ohio.

The general state of trade throughout Ohio shows considerable improvement during the past ten days, but the change is not so great as anticipated by those whose view of the situation was taken from a sentimental point. Manufacturers in all branches of the iron and steel trade are feeling easier, orders and inquiries are more numerous, and some new enterprises are projected. If the improvement in business becomes permanent these enterprises may soon become realities. The fact that the wages scale has been settled for rolling mills and that sheet mill workmen have gracefully accepted the 10 per cent. reduction is a subject of much talk and favorable comment. While these settlements only affect certain localities, directly, it is generally felt that the success which has attended the negotiations between employers and workmen will have a beneficial effect on all manufacturing industries.

Swedish magnetite ore, 60 per cent., has been sold, delivered, at Dortmund, Germany, at 16.50 marks, equal to \$4.10 per gross ton.

THE WEEK.

The curious spectacle of an entire city being sold for debt was seen in West Virginia last week, when Kanawha City, a town founded several years ago to rival Charleston, was put up at auction in 3000 lots.

Unemployed workmen are flocking from the small towns and country districts into the large cities, hoping to get work. As in most of the cities it is a difficult matter to provide for their own unemployed, this fact is naturally a cause for complaint. New Orleans, Pittsburgh and Indianapolis are among the cities suffering from this invasion.

The first shipment of cotton direct from Charleston, S. C., to Liverpool and Bremen was made recently, when two large steamships sailed from the first named port with over 17,000 bales, the largest cargoes ever shipped from Charleston. These steamers are to run regularly during the cotton season.

The cost of insurance against accidents to workmen in Switzerland, as provided by a recent law, is to be borne as follows: Half by the employers, a quarter by the State and a quarter by the workmen.

Japan is to have a National Industrial Exhibition in 1895, to be divided into seven sections, namely: Industry; art and art industry; agriculture and horticulture; marine products; education and science; mining and metallurgy, and machinery.

The passenger transportation record of the Illinois Central Railroad Company during the six months of the World's Fair reaches the unprecedented total of 19,342,684 persons carried on their lines.

The longest iron railway bridge on the European Continent was opened last week across the river Vistula, between Forden in Prussian Poland and Culmsee in Germany. It is 1450 yards long and cost 8,000,000 marks.

England's prolonged coal strike has at last been settled. This end was accomplished at a conference arranged by the Government between the mine owners and miners. Over 350,000 men resumed work on Monday at the old rates, which will continue in force until February, when a board of conciliation will be formed to arrange a final settlement of pending questions. Great suffering has resulted from the strike, the loss by which is estimated to amount to \$150,000,000.

"El Cid," late of the Morgan line, purchased by the Brazilian Government and fitted out as a war vessel, sailed from New York under her new name, the "Nichteroy," on Monday. She took on board the former steam yachts "Javelin" and "Feiseen," now turned into torpedo boats, and a large supply of torpedoes and ammunition. The steamship "Britannia," also purchased by Brazil, is taking in her supplies and will follow as soon as her heavy armament is received. Rumor has it that the insurgent Admiral, Mello, is making preparations to intercept the vessels.

W. H. Preece, the famous English electrician, remarked during his recent visit to this country that one of the things that struck him most forcibly was the number of very young men that were coming to the front in the various branches of electrical effort. This impression might well be intensified by a

recent announcement that the control of the entire electric system of the town of Bloomfield, N. J., has been placed in the hands of a juvenile electrician named Perry, whose years number just 15. This electrical prodigy has, it is said, invented a model electrical car possessing points of merit, and he is at work on other experimental lines in the same field.

The winter railroad schedules, which went into effect on November 18, are marked by the discontinuance of the Chicago fliers, and the practical adoption by all the trunk lines of 26 hours as the standard running time between New York and the metropolis of the West.

By the use of the improved dock equipment at the ports of the Lake Superior region, the expense of handling the iron ores has of late been remarkably reduced, as well as the time occupied in loading and unloading. Where the expense of putting the ore into the holds of vessels was estimated at from 10 to 15 cents per ton, with the apparatus in use at some of the docks this ore is now lifted from the vessel, carried back 350 feet, and dumped, at a total cost, including all expenses, of from $\frac{1}{2}$ cent to $1\frac{1}{2}$ cents per ton. With 21 men in the hold of a vessel carrying 2000 tons of iron ore, the entire cargo has been stocked in 17 hours.

Postmaster-General Bissell is considering a scheme by which the Government may hereafter do its own printing of postage stamps, and probably of postal cards and postal notes. The Superintendent of the Bureau of Engraving and Printing has been instructed to submit a formal bid together with a statement of the facilities of the Department for doing the work.

Active preparations are being made for the canal conference to be held in New York City on December 5.

Negotiations are reported to be on foot, backed by the Russian Government, with the view of ending the competition between the Russian and American petroleum interests, and forming a great international trust. The recent cutting of prices is said to have led up to the proposal, which is made by the Russian dealers. The alleged scheme is that Russian oil producers shall control the Eastern, European and Asian markets, while America shall hold England and Western Europe.

At a recent meeting of the New York Board of Fire Underwriters a resolution was adopted authorizing the president of the board to address a communication to the Governor of the State of New York, calling his attention to the enormous increase of fire waste of late years, due largely, in the opinion of the underwriters, to the improper wiring of buildings for electric lights and power, asking his influence to secure legislation which shall require that no person shall be permitted to wire buildings for electric light and power purposes who has not been duly licensed as competent to perform the task by some Board of Control competent to test the qualifications of applicants, as is now the case in connection with engineers having charge of boilers.

The large turbine wheels for the Niagara Falls Electric Company's system are now ready to be put in the pits, into which the water will be introduced in about two weeks' time. The dynamos, which are being built by the Westinghouse Company, will not, however, be ready until the spring.

The Iron Age

New York, Thursday, November 23, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Pig Iron Production

The recovery in the iron trade will have to be very rapid indeed if the prophecies of our statisticians are to be fulfilled. In times like these we are apt to forget the exuberant visions in which men have indulged when business skies were unclouded. In 1890 particularly the outlook seemed to favor a long continuance of prosperous condition. Trade was very active and production in almost every line was at its maximum, but prices were not booming and business seemed to be on a remarkably substantial basis. What more could be asked than full employment for all the facilities of commerce and manufactures, with reasonable prices on all kinds of merchandise and reasonable profits to all concerned? Looking back, it seems to have been an ideal year. Prices were high as compared with those which have ruled since then, it is true, but it must be remembered that we have passed through a period of abnormally low prices of late, and those of 1890 were by no means excessive for this country. It was, however, a year in which to take a roseate view of the future and to make calculations of further expansion in production to meet the enormous demand, which seemed almost insatiable. When a famous Boston statistician turned his attention to the tremendous possibilities of the American iron trade, and as a result of exhaustive research and most rigid examination of prevailing conditions said that the product of pig iron in the United States in the year 1900 would be about 42,000,000 tons, there were others who even surpassed him in this ecstatic view of the future and thought it might run up to 45,000,000 tons.

In the calculations which were made at that time there was no allowance by any one for a period of severe reaction, but all estimates of future production were based on a sort of law of accelerating demand which seemed to have manifested itself for a sufficient duration of time to be accepted as established. In the last decade our pig iron production jumped most marvelously, trebling itself from 1879 to 1890, and placing this country in advance of all other countries in the world in the output of iron. It was no wonder that the future looked big with possibilities. A rate of progress had been shown for a long stretch of more than ten years with hardly a break, which seemed destined to continue. Had the reaction of this year been then

foretold, it would have been so greatly at variance with the manifest destiny of the iron trade of this country that the prophet or seer would have been treated with the most scornful contempt. Having produced over 9,000,000 tons in 1890, by this time we should be producing at the rate of 12,000,000 tons this year, if the law of accelerating demand were really in force. Instead of that we shall probably make something over 7,000,000 tons, or less than the output of 1889. Being thus thrown back four years in our triumphant progress, it will take probably a year or two to catch up to our standing in 1890 to 1892. From that time to 1900 there would be the most wonderful activity ever shown on this earth to realize the prophecies to which reference has been made.

The more this matter of forecasting the production of pig iron is examined the more remarkable does the prescience of Hon. Abram S. Hewitt appear. In 1856, in an address before the American Geographical and Statistical Society, he put the pig iron production of the world at 14,000,000 tons in 1875 and 23,000,000 tons in 1895. As nearly as can be ascertained, his prediction for 1875 came within a few hundred thousand tons, which is wonderfully close considering that in 1856, when the forecast was made, the world's annual production had only attained 7,000,000 tons. According to statistics collected by James M. Swank, the world's production of pig iron in 1890 was a little in excess of 27,000,000 tons. The reaction since then, and the recovery to be expected, will probably bring the output in 1895 very close to Mr. Hewitt's figures. In 1890, in an address before the American Institute of Mining Engineers, he estimated that the world's output in 1900 would be 35,000,000 tons, of which the United States must supply 45 per cent., or say 15,750,000 tons. Should even this be a correct estimate of the expansion of the trade by 1900, the closing years of this century will be marked by very great activity and a reaction from the present depression must soon make itself strikingly manifest.

Engineer-in-Chief Melville in a report to the Secretary of the Navy, dated October 15, 1890, gave the reasons for the adoption of three screws in the "Columbia." He said that it was extremely improbable that shafting of the great size necessary to transmit this enormous power (21,000 horse) to twin screws could be obtained in this country, either in reasonable time or with any guarantee as to its strength. Therefore it was decided by the bureau to depart from the usual practice and divide the power into three parts. A further consideration in favor of three screws was that either propeller could be disconnected from its engine and left free to revolve, thus retarding the speed of the ship but very slightly when she is propelled by two engines. In moderate cruising only one engine would be

necessary and this could be driven at its most economical speed. It was estimated that one screw would drive the ship at the rate of 15 knots and two at the rate of 18 to 19 knots.

The Steel Rail Situation

From the chaos into which the steel rail trade was plunged for a brief period has arisen a new organization, which has rectified the cardinal error of the association whose life ends with this year. That error, it is frankly conceded, lay in the failure of the combination to follow downward in price with the declining market of raw material. As we stated in our recent review of the history of the old association, the price ruling when it was formed was fair alike to producer and consumer. Public expression of that fact was given repeatedly by representatives of the latter, and by the excellent technical papers which represent that interest.

We have pointed out that starvation prices are in the long run as dangerous to the best interests of the consumer as they are destructive to the weaker producer and crippling to the stronger makers. The selling prices named lately simply meant the abandonment of rail making by some of the concerns, and threatened to render the producing capacity inadequate in future periods of a suddenly expanded demand.

The war begun during the past few weeks promised to crowd down values to unprecedented figures, and sundry writers jumped at the conclusion that it would not stop until an assumed cost had been reached. A good deal of wisdom was aired as to what figure represented that cost, Pittsburgh reaping the distinction of being the victim of these calculators with the price of billets as the basis. Aside from the circumstance that pretty wild guessing was indulged in, the fact was ignored that conditions are very different in other parts of the country.

We understand that the arrangement entered into during the past week is that the mills of the Maryland Steel Company and the Pennsylvania Steel Company have been leased by the other concerns, to be held in reserve until the demand makes it necessary to draw upon their capacity. The mills are now quoting \$24, f.o.b. This, it will be observed, is an adequate concession to ruling circumstances so far as the price of raw material is concerned. It allows all the mills a moderate profit, considering that they are only partially employed, and is entirely fair to the railroads, who get their material cheaper than ever.

So far as the general iron trade is concerned this announcement will be received with some satisfaction, since it promises to give tone to the soft steel market, through the stoppage of operations at the Maryland works. We have heard rolling mill owners of national reputation assert that they would rather pay producers of soft

steel billets a price representing a living profit than have the trade in the demoralized condition in which it has been for some time past.

A Heavy Drop in Molders' Wages

The Western foundry trade has been badly demoralized by the dearth of business since last spring. It will be remembered that but a short time before the financial panic, yet with indications of commercial congestion plainly visible, the molders undertook to force an advance in wages. The stove molders, wiser than their brethren in other lines, receded from this position, but the machinery molders and workmen in jobbing foundries went ahead, contrary to the advice of disinterested persons. The foundrymen who were caught with partly filled contracts, or those whose financial condition would not permit them to shut down, yielded to the molders' demands, although in the majority of the foundries affected the employers made a successful resistance. Probably the condition of the foundry business during the summer might not have been any better if this fight over wages had not occurred. The depression in trade was due to other and more general influences. But bitter reflections must nevertheless come to the leaders now when they see to what straits their followers have been reduced. At a time when they might have been earning very fair wages they chose to be idle. Since then they have been forced into more prolonged idleness by the total lack of employment. Work is now being resumed in the foundries in a half hearted fashion, and those workmen are esteemed lucky who are able to get partial employment at low wages. It seems like a cruel punishment on men who were not satisfied when they were fairly remunerated, but demanded "more." Instances are known in which molders who were successful last spring in establishing a minimum of \$2.75 per day are now working for \$1.25, and are glad to get even that. This is not in some hamlet where living is cheap and wages are never very high, but in the city of Chicago. The class of work done by them is not such as requires a high order of skill, it is true, but the drop in the earnings in this line has been very great to occur within nine months. It will take a long time, we fear, for matters in this branch of business to work up to their old level of prosperity for both employers and employed.

Last year about 1,250,000 tons of cotton seed were crushed in the United States, from which were extracted 1,000,000 barrels of oil. A Southern journal shows where the bulk of this product goes, as follows: Chicago pork packers buy 300,000 barrels, most of which is made into lard. Maine sardine packers use 20,000 barrels. Between 50,000 and 100,000 barrels are consumed by various soap makers. Between 200,000 and 300,000 barrels go to Europe, where it is made into "butter."

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., November 21, 1893.

The tariff, Hawaii, silver and other problems of state are forgotten for the moment in the exuberance of national pride in Government circles over the triumphs of American nautical skill achieved in the cruiser "Columbia." The acknowledged hero in this peaceful conquest on warlike lines is Commander George W. Melville, Engineer-in-Chief of the United States Navy. The acknowledgment of the fact is the telegrams of congratulation from naval and marine engine experts in the United States, England, France, Germany and Russia, and naval officers and departmental officials, and attaches of foreign embassies and legations at the American capital. Commodore Melville was promenading back and forth in his spacious official apartment, as is his wont when not indicting professional or official papers at his desk. He is a man without frills. Speaking of the "Columbia," "the modern gem of the ocean," the commodore said in his usual quiet way: "Her engines were designed for 21 knots, with a surety of 22 knots, a possibility of 22½ knots and an outside speed of 22¾ knots. They have exceeded even these liberal judgments of the calculations. The whole run of the 'Columbia' over her whole course as telegraphed to the department was 22.85 knots. In my opinion 25 knots was a mistake.

"The speed attained by our warship exceeds that of the ocean greyhounds the 'Campania' and 'Lucania,' built in England by the Fairfield Engine Building Company. They have made 22 knots for the whole trip. Therefore the 'Columbia' is the fastest ship in the world to-day, merchant or naval.

"The phenomenal burst of speed, 25 knots, accredited to the 'Columbia' over the short distance, 8 knots between buoys, must have been due to buoys shifting or drifting.

"I had an intimation from her experimental trip that she could make 23 knots over the whole course, but it was necessary on the official trial to slow down engines on account of foaming water, probably from grease or dirt in the boilers.

"Ten blowers drive into each fire-room, really a large air tight box in which the boilers are placed, 20,000 cubic feet of air.

"The triple screw had been tried by Italy, Germany and France. The French ship 'Dupuy de Lome' was particularly important, as for two years she has been trying to run off her steam trial. At last accounts they intended to remove her boilers. The German ship 'Kaiserin Augusta,' 6000 tons, with her three screws, made a maximum of 20 knots, and was considered fairly successful, but she has not the reserve of power to in any way approach the speed of the 'Columbia.' The Italian ships are small. The three screws on both these ships are on the same horizontal plane.

"The advantage claimed by the Bureau of Steam Engineering Navy Department is that the position of the three screws are not on the same plane in any direction. In the first place, the two side screws are spread from forward to aft, giving room for the screws to work in solid water and avoid the friction of the hull. They are also

placed as far forward of the center screw as the formation of the hull will permit. The center screw is placed lower down and inclined downward from forward to aft.

"Yes, I realize it was a bold stroke, but I was convinced that by a proper distribution of the screws it would be a success. The venture was made in the face of many persons in authority and the engineering world, and I presume if it had not been a success I would have met the common fate; but the application has been a success in efficiency and economically.

"The engines are our type of triple vertical overhead expansion. Two screws with the same power should produce the same results if it could be applied. A large ship is easier to drive, horse-power per ton, than a small one. The 'Columbia' is 7000 tons.

"The engines of the 'Columbia' were designed wholly in the bureau, but the Cramps deserve the highest praise for accuracy of workmanship. They deserve their premium, whether \$350,000 or \$400,000, if they get 23 knots.

"Yes, I think the limit has about been reached. The speed can be increased if that alone is required, but a man of war must be a compromise. Too much speed detracts from her other qualities. Such ships must be designed as fighting machines and for celerity of handling in close quarters or entering harbors."

Chief Naval Constructor Hichborn said: "The question of speed, of course, is a problem of steam engineering, but the building of a hull which will produce the best results from a given amount of power and stand the enormous strain belongs to construction. In the designing of the 'Columbia' it was known beforehand that the very highest rate of speed attainable consistent with the purposes of the ship were desired, therefore all the calculations were pointed that way. It was the aim to avoid all useless weights and to apply increased strength where strength was required to meet the great forces to be encountered under a high rate of speed. The lines were also laid with a view to speed. The 'Columbia's' hull went through the ordeal magnificently and comes out without a strain. The 'Campania,' the ocean greyhound, as she is called, a British built ship, when driven 22 knots an hour on her trial, was so torn and strained that she had to be sent back to the contractors, and her designers, I understand, were dismissed. The 'Columbia's' hull will be a model for the study of our foreign friends, and Melville, with his machinery, got out of the lines all the speed there was in them."

OBITUARY.

ALBERT TRACY CONVERSE.

Albert Tracy Converse, a resident of Norwich, Conn., and one of its best known and most respected citizens, died on the 16th inst. at his residence in that city, of pneumonia. Previous to 1840 he conducted an iron foundry known as the Phoenix Foundry, when he went to California, where he made the first casting ever made in San Francisco. There he was appointed United States Lighterman, having charge of transportation to the Custom House of all the dutiable goods discharged from foreign ships at anchor in the harbor. In 1856 Mr. Converse became a partner in the Arcade Malleable Iron Company

of Worcester, Mass., and after his establishment at Norwich in the hardware and iron business in 1860 he carried on large business interests in the former city. He was in his seventy-first year.

JOHN P. CHATILLON.

John P. Chatillon, of John Chatillon & Sons, scale makers, who, it will be remembered, left New York in search of health November 17, 1892, on the "Fuerst Bismarck" for Naples, died in Paris Friday, November 17 last, in his forty-ninth year, of Bright's disease, just a year from the time he left here. His body will arrive in this city by the steamer "La Bourgogne," leaving Havre November 25. The funeral service will be held in St. Ann's Church in East Twelfth street, New York, due notice of which will be given. A more extended reference to Mr. Chatillon will be given in these columns later.

GEORGE SELDEN.

George Selden of the Erie City Iron Works, Erie, Pa., is dead. He was born at Lynn, Conn., served in the East India trade, was among the successful forty-niners, and in the late fifties engaged with Col. John H. Bliss and others in the Erie City Iron Works.

FRANK F. CLEVELAND.

Frank F. Cleveland, secretary and treasurer of the Erie, Pa., Engine Works and president of the Union Iron Works, died on the 20th inst. after a lingering illness. He went to Erie when a lad, and from a bank clerk engaged in the engine building business, in which he was very successful. Two years ago he was poisoned by inhaling fumes during the burning of his residence and he never recovered from its effects.

MANUFACTURING.

Iron and Steel.

Work on the new Bessemer plant now under construction by the Ohio Steel Company, at Youngstown, Ohio, is progressing favorably, 300 men being employed at the present time. Much of the machinery has arrived, and the work of putting it in position will be pushed without delay. The foundations of the two large engines are also nearly completed.

The Fox Furnace Company were organized at Columbia, Ohio, last week, with a capital stock of \$35,000. The incorporators are F. B. Fox, Aldin Guilford, Thomas E. Henry, E. C. Fox and Chas. H. Henry, all of Cleveland, Ohio.

It is probable that the mill of the Wilkes Rolling Mill Company, at Sharon, Pa., which has been idle four months, will start up within a few days.

The Catasauqua Mfg. Company, Catasauqua, Pa., have started up two of their mills.

The Ashland Coal & Iron Company, Ashland, Ky., have reduced the wages of their furnacemen from 10 to 20 per cent. The cut was accepted.

King & Andrews Company, 218 North Union street, Chicago, have added to their foundry a plant for the manufacture of semi-steel by the McDowell process. This department is known as the Semi-Steel Company. They have contracts with the Standard Oil Company, Wheeler & Tappan and the North Chicago Street Railway Company. The department operated as the Semi Steel Company will manufacture semi-steel, ferro aluminum, bronze and anti-acid castings. The company have issued a circular covering these specialties and noting their qualities and uses.

The Carpenter Steel Company of Read ing have paid a dividend of 1½ per cent.

It is announced that the Irondale Rolling Mill, recently burned at Anderson, Ind., will be rebuilt at Middletown, Ind., providing a bonus of \$50,000, 8 acres of land for a site and a gas well is given.

The puddling department of the Passaic Rolling Mill, at Paterson, N. J., which

closed down some time since, has resumed operations.

Potts Brothers Iron Company, Limited, Pottstown, Pa., have started their rolling mill after a stoppage of three months.

At New Haven, Conn., the New Haven Rolling Mill has started up with a full force after an idle summer, and a noticeable improvement has also taken place in the business of other industrial establishments of that place. The city presents a more businesslike appearance than for many months past.

The Columbia Rolling Mill Company, at Columbia, Pa., have reduced the price paid for puddling to \$3 per ton and other work in proportion. The company state that this action was necessary in order to compete with mills paying \$2.50 and \$2.75 for puddling.

The entire plant of the West Hamburg, Pa., Rolling Mill has been dismantled.

The Malleable Iron Works, at Chattanooga, Tenn., which recently went into receivers' hands, will be kept in operation and there will be no reduction in the force of workmen. One of the receivers states that the concern is a paying one, and the appointment of receivers was only due to a temporary embarrassment.

A press dispatch from Anderson, Ind., dated November 16, says that William Chambers, superintendent of the Anderson Steel Casting Company, has brought suit in the Circuit Court asking for the appointment of a receiver. The capital stock of the company is \$50,000, with liabilities amounting to \$20,000.

The schedules of Frank L. Froment, iron and steel commission merchant, at 446 West street, New York, show direct liabilities, \$90,464; contingent liabilities, \$26,126; nominal assets, \$103,403; actual assets, \$40,644. The principal creditors are A. & P. Roberts, Philadelphia, \$36,237; Mary E. Bacon, Boston, \$10,000; Thames Iron Works, Norwich, Conn., \$5432; William Clark's Son & Co., Pittsburgh, \$4405; Susquehanna Iron Company, Columbia, Pa., \$6320; Columbia Iron Company, Columbia, Pa., \$2716; Lebanon Rolling Mills, \$2500.

In open hearth mill No. 2 at the Homestead Steel Works, Homestead, Pa., two new open hearth steel furnaces are being constructed. It is stated that the hot metal route which has been in operation for some time carrying hot metal from the Edgar Thomson blast furnace at Bessemer to the Homestead Steel Works has not been as successful as anticipated by the firm and will be abandoned. Considerable money was spent in building it, and now that it has been decided to abandon it, it is not improbable that the long deferred question of building additional blast furnaces either at Duguesne or Homestead will again be considered by the firm.

The James P. Witherow Company, engineers and contractors, of Pittsburgh, whose works are located at New Castle, Pa., will shortly start up this plant, which has been idle for two or three months. It is stated that the firm have secured sufficient orders to warrant a partial resumption of operations.

We are advised that the report in circulation at Pittsburgh last week to the effect that the Carnegie Steel Company, Limited, had purchased the Lower Union Mills of the Oliver Iron & Steel Company in Allegheny, Pa., is without foundation.

At the Homestead Steel Works, at Homestead, Pa., 1500 horse-power Babcock & Wilcox water tube boilers are being installed, also 500 horse-power of the same type of boilers at Lucy Furnaces, Pittsburgh.

The plans of the reorganization of the West Superior Iron & Steel Company, at West Superior, Wis., are said to call for an expenditure of \$1,500,000. The proposed additions include an open hearth furnace, blast furnace and coke ovens.

Lawrence Furnace of the Lawrence Furnace Company, at Ironton, Ohio, which has been idle for some time, has again resumed operations.

The Malleable Iron Works, at West Troy, N. Y., which have only been running one furnace during the past two months, started another furnace November 16, to be followed soon by another.

Extensive improvements and additions will be made to the plant of the Pomeroy Rolling Mill, Pomeroy, Ohio, owned and operated by the Union Iron & Steel Company of Youngstown, Ohio. Lately a railroad has been built into Pomeroy, and it is

claimed the prospects of this plant running full time in the future are considerably improved in consequence.

It is stated that Vesuvius Furnace of the Ironton Coal & Iron Company, at Ironton, Ohio, which has been idle for some months, will be started up about the first of the year.

The plant of the Oil City Tube Company, at Oil City, Pa., has gone on full time, giving employment to about 300 men.

An effort is being made to interest the citizens of Trenton, Mo., in the erection of a rolling mill. There is an abundance of coal in that vicinity, scrap iron can be had cheap, and the projector of the enterprise, whose name is I. L. Morris, thinks it is a good location for the manufacture of sheet iron or tin plate. The prominent business men of Trenton have been strongly impressed by the facts presented for their consideration.

The Morewood Company, manufacturers of tin plate, at Gas City, Ind., are represented in Chicago by Saunders, Fielding & Bond, Room 419 Ashland Block, corner of Clark and Randolph streets. The company are now making several brands of bright and roofing plate, but have been hampered hitherto by the deficient supply of black plates. They started their tinning pots first, and have been purchasing plates in Pittsburgh, as well as importing from Great Britain, but in a very short time they will have an independent source of supply in their own rolling mills, which are now completed at Gas City and will be run slowly until the machinery is found to be in proper condition for regular work.

Corporate articles have been filed with the county recorder at Des Moines, Iowa, by the Mexican National Iron & Steel Company, with capital stock of \$3,000,000. Richard Honey is president, J. E. Barcroft, vice-president; James McCaughan, secretary, and Thomas Phillips, treasurer. The other incorporators are A. A. Robinson, J. H. Hampson and J. G. Rounds. The company have leases upon 40,000 acres of land near Durango, and own numerous mines and the furnaces and rolling mills which were formerly owned by the Durango Steel & Iron Company, and which it is intended shall be put in operation.

The Andrews Bros. Company of Youngstown, Ohio, have resumed operations in all departments and are now supplying the trade with iron and steel bars, bands and hoops to 16 gauge inclusive, and light sheets, together with Haselton, Scotch and Haselton strong pig iron. During the long shut down the rolling mills were thoroughly repaired and improvements were also introduced, which will enable the company to serve the interests of their patrons even better than before. John McLauchlan is Western manager, at 59 Dearborn street, Chicago.

The Whitaker Iron Company, at Wheeling, W. Va., manufacturers of black and galvanized sheet iron, advise us that the plant will be rebuilt on a larger scale as soon as the insurance has been adjusted.

Last week one lap weld furnace in the plant of the Duquesne Tube Works Company, at Duquesne, Pa., was put in operation, giving employment to about 150 men. This week it is expected that one butt weld furnace will be started up, giving employment to a large number of additional men. This firm have quite a number of orders on hand for boiler tubes, of which they make a specialty, and expect to keep their plant in operation throughout the winter, though not to full capacity.

Wallace, Banfield & Co., Limited, operating the Irondale Rolling Mills, at Irondale, Ohio, manufacturers of tin andterne plate, are operating their entire plant to its utmost capacity, three turns of eight hours each being the rule. The firm have met with gratifying success since they embarked in the manufacture of tin andterne plate, and have had a ready sale for their product right along as fast as it could be turned out. They are running on orders only, and find it necessary to operate their plant as noted above in order to keep pace with the demands made upon them by the trade for their plate.

This week two sheet mills at the plant of the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, will be laid off, and other departments will be closed down unless an agreement is reached with the Amalgamated Association on the wage scale governing sheet mills.

The night turn at the Beaver Falls Mills, Beaver Falls, Pa., has been discharged.

This turn was engaged in filling orders for shipment, and these orders running short the services of the men were no longer required.

A portion of the plant of the American Tube & Iron Company, at Youngstown, Ohio, which has been entirely closed down for some months, was put in operation last week. Should business continue to improve other departments of the plant will be started up.

The 18-inch train at the Albany Iron Works, Troy, N. Y., was put in operation November 16. The Belgian and 14-inch trains are also running, giving employment to more men than have been on duty at the big plant for many months.

The Hamilton Iron & Steel Company, Limited, have just been organized at Hamilton, Ont., Canada, with a capital stock of \$1,000,000, divided into 10,000 shares of \$100 each. The objects of the company are to mine, operate blast furnaces and steel works. The city of Hamilton has donated the company a suitable furnace site, on which they intend to build, and have, in fact, already commenced on the foundations a furnace, 18 x 75 feet, of the very latest type, including compound cross condensing engine, hot blast stoves of the Gordon-Cowper-Whitwell patents, and all the latest improvements of a first-class furnace plant, expecting to make at least 200 tons per day. They will use Connellsville coke, but all the ores will be native, which are found in Ontario, the promoters state, in great abundance, suitable for both the manufacture of foundry and Bessemer pig. Later on the company intend to build a steel plant in connection with the blast furnace for the manufacture of steel in all shapes for the market. New York and Hamilton and Toronto parties are interested in the project, the officers being Wm. Foster, Jr., president, New York; John H. Tildon, vice-president, Hamilton, Ont.; J. J. Morehouse, treasurer and general manager, New York, and H. M. Curtis, secretary, New York.

The works of the H. M. Myers Company, located at Beaver Falls, Pa., manufacturers of shovels, spades, scoops and drain tools, which have been closed down for several months on account of the severe business depression, will resume operations to nearly full capacity about December 1 next. Indications are that prices of shovels and other similar goods will be somewhat lower this year than last season. Notwithstanding this, however, the above firm propose to maintain the high standard of excellence in finish and quality of their goods.

The Carpenter Steel Company, Reading, Pa., have sufficient Government contracts on hand for steel armor piercing projectiles to keep their plant in operation to full capacity well into the future. Some additions to equipment have recently been made by this concern, included in which is a large steam hammer.

William Kemp and James Keenan, the receivers for the Troy (N. Y.) Steel & Iron Company, have sent out circulars inviting interested parties to submit bids for the plant, which they now intend to dispose of, if possible. The bids will be received and opened December 13, but it is possible that the sale will not be consummated at that time, as the circular is mainly to obtain an idea as to whether a suitable price can be obtained.

There is a project on foot to build a rolling mill for making iron and steel sheets at a point on the Missouri River near Clinton, Iowa.

Ninety tons of black and galvanized sheets are kept out of the market each day in consequence of the recent destruction by fire of the plants of the Irondale Steel & Iron Company, Anderson, Ind., and the Whittaker Iron Company, Wheeling, W. Va.

A company has been formed and active steps taken toward the erection of a sheet mill plant near Saltsburg, Pa., to consist of four light mills. A. Gourley, superintendent of P. H. Laufman's sheet mills, at Apollo, Pa., is the leading spirit in the enterprise.

During October there were 3609 names on the pay rolls of the Pennsylvania Steel Company, at Steelton, Pa. On Saturday, November 18, \$58,500 were paid to the employees of this concern for two weeks' wages.

The fourth sheet mill of the Cambridge Iron & Steel Company, Cambridge, Ohio, was put into operation last week. This mill had been idle many weeks in consequence of dullness in the market. Revival

of trade in galvanized sheets caused its resurrection. This company now have two galvanizing pots running steadily.

It is stated that a movement is on foot for the transfer of the interest of the Pottstown Iron Company, Pottstown, Pa., from the receiver's hands to the old firm. The basis of settlement will be that the creditors will receive one-half of the money in 5 per cent. bonds and the other half in preferred stock. It is stated that a paper is now being circulated among the creditors for their signatures to the above agreement and February 1 is set as the time for the transfer to be made.

The Edgar Thomson Steel Works, at Bessemer, Pa., has been closed down and the reason given for the suspension of work at this time is that it is desired to make the usual annual repairs.

Machinery.

The Scott Foundry & Machine Company, Reading, Pa., have secured an order from the Wm. Cramp & Son, Ship Building & Engine Company of Philadelphia for eight massive plates weighing 35,000 pounds each for the compound triple expansion marine engines to be used on the two new ocean liners now building for the American Steamship Company.

H. K. Porter & Co. of Pittsburgh, builders of light locomotives, will shortly commence the erection of a new brick machine shop 72 x 135 feet in size and two stories high. A new office building to cost \$5000 will also be built by this firm.

The Biggs Boiler Company of Akron, Ohio, make a specialty of the manufacture of steam boilers and rotary bleachers. This firm have secured some fair sized orders recently and report the outlook for the future as much improved.

The Spicer Mfg. Company, New Philadelphia, Ohio, recently shipped two carloads of nail machinery to the Superior Barb Wire Company, Dekalb, Ill., consisting of nail cleaning barrels of 25 keg capacity, saw dust separators, sheet iron hoppers, counter shafts and nail trucks.

The new roll turning shop under construction for some time by the Leechburg Foundry & Machine Company of Pittsburgh has been completed. This shop is equipped with roll turning lathes of modern design and large enough to turn the largest rolls used. This firm have recently awarded a contract to the Buffalo Forge Company, Buffalo, N. Y., for a 100-inch fan to heat the shop with hot air. The same firm have also placed an order with the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, for one of their large radial drill presses.

The New Doty Mfg. Company, makers of punching and shearing machines, Janesville, Wis., have kept their shops running continuously during the last few months, but with a reduced force and on shorter time. The improvements which the company contemplated making to their plant have been postponed until better times.

The Bates Machine Company of Joliet, Ill., have made a very creditable record this year. Not a day was lost on account of the financial stringency or the depression in business. Their working force was reduced to some extent, but not very seriously. Their output for the year will average an engine a week, ranging from 75 to 1500 horse-power, besides other work. They have recently furnished a number of electric street railroads with engines, the demand from that class of trade having been the heaviest.

The Bridgeport Crucible Company, Bridgeport, Conn., whose plant was destroyed by fire a short time since, will rebuild at once. The company have been doing a prosperous business and should they rebuild a larger plant will be constructed than the one destroyed.

Dean-Whiting Elevator Company, 140 Union street, Worcester, Mass., have recently purchased the stock, tools, &c., of the Worcester Hydraulic Mfg. Company and will carry on the business of manufacturing hydraulic elevators and dumb waiters, in connection with their former lines. Seven of these hydraulic dumb waiters have been shipped to the insane asylum at Northampton, Mass.

The Coventry Machinist Company, Coventry, England, have closed up their offices in Chicago and Boston and in the spring will open a general office in New York.

Application has been made to Justice McLennan of the Supreme Court, Syracuse, N.

Y., by Edward Nottingham, attorney for the Phoenix Foundry & Machine Company, for the appointment of a receiver for the affairs of that concern. The motion for a dissolution was a surprise, but was decided upon by the Board of Directors. A Caldwell Belden was made receiver. All debts will be paid in full and the company will wind up their business. The capital stock of the concern is \$60,000. The assets are set down at \$239,031, the actual liabilities at \$167,248 and contingent liabilities at \$26,630. The Phoenix Foundry & Machine Company were organized in the spring of 1881, succeeding the firm of Cobb, Herrick & Co., who carried on the same business at the same place. The plant was very complete. The company manufactured engines and boilers. Alvin J. Belden managed the business. All of the property will be closed out.

Batt, Bonnell & Thompson of 34 Dey street, New York, have been appointed agents for New York State for the Philadelphia Drop Forge Company, makers of drop forgings in iron, steel, copper and aluminum.

The Eady & Maddox Machine Works have been incorporated at West Point, Ga., with a capital of \$15,000, by T. J. Eady and J. H. Maddox of that place.

The foundry and machine shops of A. G. Morris have been started at Harrisburg, Pa.

The Belknap Motor Company, Portland, Maine, have recently secured an order for a 500-light dynamo and plant for the Vermont State Insane Asylum, at Waterbury, Vt.

Among recently authorized corporations in Illinois are the following: Northern Illinois Coal Company, Chicago; capital stock, \$100,000; incorporators, H. E. Bell, Albert Phalen and W. E. Waite. Owens Brass & Copper Works, Chicago; capital stock, \$10,000; incorporators, Nathan C. Moore, William B. McIlvane, Max Baird. Southwestern Construction Company, at East St. Louis; capital stock, \$100,000; incorporators, Adiel Sherwood, Charles Voyce and Joseph P. O'Connor. The Challenge Machinery Company, at Chicago; capital stock, \$30,000; incorporators, Walter Birdsell, Theodore Johnson and W. D. Latimer.

Pedrick & Ayer of Philadelphia report that they are now in operation, running 10½ hours per day, with about half the regular force at work. They find that orders for railroad tools are coming fast enough to warrant running continuously. The firm are now under the management of James M. Hibbs, as assignee, pending the formation of a new company of which Mr. Pedrick will be one of the largest stockholders, Mr. Ayer going out and Mr. Pedrick managing the mechanical part of the business, as heretofore.

P. Prybail, whose machine shops on West Forty First street, New York, were recently burned, has taken out a building permit for a five story brick structure, to cost \$20,000.

Hardware.

Bucher & Gibbs Plow Company, Canton, Ohio, have resumed operations in nearly all departments at an average reduction of 20 per cent. in the wages of employees. About 400 men have been given employment.

The employees of Reynolds & Co., New Haven, Conn., who have for some time been working three days a week, have begun to work four days a week at seven hours a day.

The Howe Scale Company, Rutland, Vt., have commenced to run 7½ hours a day and six days a week.

The plant of the McDonald Mfg. Company, manufacturers of tinware, Montreal, P. Q., was damaged by fire on the 8th inst. The loss foots up \$40,000, on which there is an insurance of \$27,000.

The Chicago Emery Wheel Company, Chicago, have filled a certificate of an increase in capital stock from \$10,000 to \$50,000.

The implement manufactory of Selby, Starr & Co., Peoria, Ill., has resumed operations. They have started up with a reduced force of men, but the management expect to be under full headway in a short time.

All the handle finishers employed by Landers, Frary & Clark, New Britain, Conn., have resumed work. They have been out for four months.

On the evening of the 15th inst. there was a slight fire in the office of the Pennsylvania Bolt & Nut Works, Lebanon, Pa.,

but it was fortunately extinguished before damage of any account occurred. It is supposed that the fire originated from the steam pipes.

The Eagle Lock Company's works, at Terryville, Conn., are now running five days a week instead of four days, as heretofore.

Andrew Terry & Co., Terryville, Conn., are running five days per week.

C. S. Weber & Co., 415 Broadway, New York, sole agents for the American Wire Glass Mfg. Company, Tacouy, Pa., have just closed two large contracts for wire glass. One contract calls for 6000 square feet of $\frac{1}{2}$ -inch thick wire glass, to be used as a roof for the New York Post Office. Geo. Bickelhaupt is furnishing the skylight work. Another large contract calls for 1700 square feet of $\frac{1}{4}$ -inch thick wire glass, for two of the largest skylights ever designed or used in New York. They were designed by Architect Stephen D. Hatch, and the contract for the work was awarded to Geo. Hayes, the expert on fire proof construction.

R. G. Surbridge, formerly president of the Surbridge Mfg. Company, Hagerstown, Md., manufacturers of cycles, has acquired the entire interest of all the other stockholders in the company, and is now handling it as an individual business. They are making some changes in and additions to their plant, and their capacity for the coming season will be largely increased.

The Consolidated Lamp & Glass Company, Pittsburgh, Pa., have just closed negotiations with the Fostoria Shade & Lamp Company, Fostoria, Ohio, for the purchase of their plant and business. Arrangements have also been made for the purchase of the business of the Wallace & McAfee Company, Limited, Pittsburgh.

The Cortland, N. Y. screen factory is putting in a new 200 horse-power Harris & Corliss engine similar to the one used in the Cortland Wagon Company's plant.

The works of the Youngstown Carriage & Wagon Company, at Youngstown, Ohio, which have been running to half capacity or less for several weeks, will go on full capacity about December 1, giving employment to a large number of additional men.

It is stated that some Eastern capitalists have acquired possession of the old hob nail works at Bridgewater, Pa., and will establish a plant there for the manufacture of tin andterne plate.

J. P. Turner, 40 and 49 Cortlandt street, New York, who puts up lightning rods of all kinds, also weather vanes, bannerets, finials, &c., says he has no cause for complaint as regards trade. He is busy at present with a dozen houses in a North River town, and will commence on a large hospital in Elizabeth, N. J., at once, in addition to other work in hand. Among some satisfactory contracts just finished he mentions the lightning rod equipment for the two power houses and tall chimneys of the Third Avenue Cable Road in this city. Edison Building in Newark and a cathedral in Jersey City, N. J.

The Hatch Cutlery Company of South Milwaukee, Wis., have filed an amendment to their articles of incorporation, adding \$100,000 to their capital stock, the latter to be preferred stock, upon which a dividend of 7 per cent. per annum is to be paid out of the first net earnings of the company, such dividends to be cumulative.

The Woodman-Cook Company, successors to Stevens, Woodman & Co., Portland, Maine, have since last January, when the change in firm style took place, nearly doubled their facilities for manufacturing. They advise us that although the season has been a dull one they have been running constantly with the exception of two weeks in July, and have been running evenings since September 1 endeavoring to keep up with their orders. They are employing about 30 skilled workmen. They are manufacturing britannia ware to some extent, but their business is mostly in silver plated ware. They do not issue a catalogue, but sell mostly from photographs or samples. A department of the plant is devoted to the repairing and replating of damaged, defaced or otherwise injured plated ware.

J. W. Fiske, 39-41 Park place, New York, has recently manufactured for the Hotel Waldorf a number of iron vases to contain flowers, shrubs, &c., to be placed around the building just inside the street walks. They have been made from special designs, and are not to be sold to any other hotel in this city. The vase represents an acorn cut in two horizontally, this emblem being

a portion of the Astor coat of arms. The acorn rests on the rustic stump of an oak tree. It is also made with a square base to set low.

The plant of the Century Cycle Mfg. Company, successors to the Standard Mfg. Company, Indianapolis, Ind., is now in operation and they are turning out some of their Arrow wheels preparatory to the spring trade. The Arrow is referred to as a strictly high grade machine.

Bennett Mfg. Company, 19 Pearl street, Boston, Mass., manufacturers of the Bennett sash fast, advise us that their fast is meeting with favor. To supply the demand the company are about to enlarge their plant and capital.

Shoenberger & Co., Juniata Iron & Steel Works, Pittsburgh, Pa., are meeting with a gratifying demand for their various brands of steel horseshoes, their sales in this direction showing constant increase. During the past three or four months this firm have operated their horseshoe department to full capacity, shipping the product about as fast as made. A pamphlet recently issued by this firm contains interesting information regarding steel horseshoes.

The Pittsburgh Plate Glass Company have released all of their employees at Ford City, Pa., from payment of house rent during the months that the works were idle. Although it had been previously decided to retain a month's rent from the monthly wages until all should be paid, as was done when the last pay was made, the firm have reversed their decision to correspond with the above.

Miscellaneous.

The Southern Pacific Railroad Company will build a new cotton shed at New Orleans, 120 feet wide and 350 feet long. They have placed the contract with the Berlin Iron Bridge Company of East Berlin, Conn. The building will be entirely of iron, the sides being made with the Wilson patent rolling shutters.

It is stated that the Watson town Car Works, Watson town, Pa., may be removed to Williamsport.

The prospects are that the plant of the Gilbert Car Mfg. Company of Green Island, N. Y., will continue to run regularly. It is understood that the creditors will be asked to assign their claims to the committee appointed and let them run the plant until the debts are paid, rather than to sell the plant at much less than its value.

The Commodore Mining Company, with a capital of \$100,000, were granted a charter of incorporation last week. The principal offices of the new concern will be located at Cleveland and the company propose to lease mines, mine ore, ship and sell it and to own cars and vessels for its transportation. The incorporators are James Corrigan, Franklin T. Ives, Stenveson Burke, Ernest T. Laydon and Price McKinney, all of Cleveland, Ohio.

Two blocks of the oxide department of the Lehigh Zinc & Iron Company, at South Bethlehem, Pa., have started up after being idle for several weeks.

The Bullard Foundry, at Poughkeepsie, N. Y., has been destroyed by fire.

The Baldwin Locomotive Works, Philadelphia, have started up on full time to complete a number of engines, work on which was suspended during the recent stringency, and which the company have lately been instructed to complete. While the present limited force will not be increased, the men will work 60 hours per week instead of 32.

The tin plate department of the Niedringhaus plant, at St. Louis, Mo., which has been shut down for some time owing to a break in the machinery, has resumed. Between 700 and 800 men were given employment in this department of the works.

A dispatch from Joliet, Ill., says that the plant of the Windsor Wire & Spring Company has been seized by the Sheriff to satisfy a claim of \$15,103.

The Wharton Switch Works, at Jenkintown, Pa., have, for the first time in the career of the concern, been compelled to shut down in every department owing to the lack of orders.

The Brooke Locomotive Works of Dunkirk, N. Y., are employing only about 100 men, as against a force of 1300 men during prosperous times. The shut down is not occasioned from lack of orders, it is said, so much as from inability to secure ready money for finished work. There are but

few manufacturing concerns in Dunkirk in operation, and the streets are thronged with idle men, who are without any hopes whatever of securing work through the winter.

It is stated that the Holland Radiator Company of Bremen, Ind., have erected a branch works at Avonmore, Pa., some 40 miles from Pittsburgh.

The Lebanon Mfg. Company, Lebanon, Pa., who have given steady employment to their workmen throughout the season, at present have but 20 cars to build, and as these will be completed in three days it is almost certain that from 150 to 175 men will be added to the army of Lebanon's unemployed.

On Monday, the 20th inst., the Bucher & Gibbs Plow Company, Canton, Ohio, manufacturers of chilled and combination hand and sulky plows, resumed operations in all departments at an average reduction of 20 per cent. in the wages of employees. This resumption of operations puts only a part of the force of the above firm to work at present, the basis of earnings being from \$2 to \$3 per day.

The new and extensive plant of the Union Car Company, at Depew, N. Y., affords a striking example of the suddenness with which this enterprising suburb of Buffalo has sprung into existence. Although only begun in May last the company's works, occupying a tract of 50 acres and covering nearly 300,000 feet of ground, are already nearly completed and ready for operation. Briefly considered the works comprise the following group of buildings: Wood working shop, 100 x 400 feet, with a wing 80 x 120 feet, designed as a planing mill; the blacksmith or iron department, 100 x 400 feet; truck shop, 100 x 120 feet; power house, 60 x 150 feet, containing a Hamilton Corliss engine of 1000 horse-power; two erecting shops, 130 x 340 feet each, with a capacity of 50 cars each; two paint shops, also 130 x 340 feet each, with a capacity of 75 cars; the wheel and axle shop, 30 x 300 feet, the pattern shop being situated on the second floor, and the car wheel foundry, 125 x 400 feet, with a capacity of nearly 400 wheels a day. It is understood that the company will start up their works as soon as there is any demand for cars, beginning with a small force and gradually increasing their capacity as required.

The Cost of Mesaba Ore.—A good deal of figuring is going on on the cost of putting down Mesaba ore at Cleveland and other lower lake ports. We understand that at the large mines the cost of delivering the ore into cars, including stripping, &c., is from 25 to 30 cents per ton. The royalty ranges from 50 to 65 cents. The freight to Duluth is 80 cents, the only item in which there is some chance for reduction. The freight from Duluth to Cleveland has been as low as 95 cents to \$1. Under the most favorable circumstances, therefore, the cost of delivering the ore would be \$2.50 to \$2.75 per ton, or for 60 to 65 per cent. ore 4.16 to 4.59 cents per unit. Since none of the mines of the other ranges can come near these figures, and since the Mesaba cannot supply more than a moderate share of the whole demand, it is utterly useless to expect that values as low as \$2.75 for ore can become general next season. It is reported that the Rockefeller interest has control of about 300,000 tons of ore for next year's delivery at \$2.05 per ton. This could, of course, be used quite effectively to keep prices low, and so dishearten the owners of other mines that their control would pass into the hands of the Standard Oil interests.

The Sheet Mill Scale.—The latest advices indicate that a settlement has been reached between the Amalgamated Association and the Western sheet iron manufacturers. A proposition was accepted to continue the weighers' and catchers' wages at \$2.25 per day, the rollers assuming the 10 per cent. reduction. The scale will be signed.

TRADE REPORT

The event of the week has been the sudden cessation of war among the Steel Rail mills, through the completion of an arrangement by which the Illinois, Carnegie, Cambria, Bethlehem and Lackawanna mills lease the Rail making plants of the Maryland and Pennsylvania Steel companies. We understand that the former will be closed down with the exception of the Marine department, and that the latter will cease making standard sections, a business from which it has practically withdrawn for some time. The price of Rails is now \$24 at Eastern mills and \$25 at Western works, for delivery during the year 1894.

Whether the railroads will enter the market at that figure may be regarded as doubtful, since they will probably hold that they have nothing to lose by delay. So far as the Steel trade generally is concerned these latest developments will probably prevent the improvement in the demand for Pig and Ore which it was expected would follow war prices for Rails. On the other hand, it is believed that the stoppage of the Maryland plant may have some effect on the Eastern Billet market, since the company in question were at times heavy producers of Soft Steel.

On the whole, reports from the different markets are not encouraging. The blows of Pittsburgh competition are being felt in all sections. Bessemer Pig there is weaker and Steel Billets are again showing a declining tendency. There are indications that suitable terms would fetch very low prices.

The expected adjustment of prices for Finished Material on the basis of the low prices for Soft Steel has come, and figures which were mentioned under the strictest pledge of secrecy some weeks since are now openly spoken of in the trade.

Pittsburgh concerns are making what is practically a clean sweep in Eastern markets. They are underbidding in a way which leaves rolling mills east of the Allegheny Mountains hopelessly out of the race. It almost looks as though their future existence depends upon the grace of the Smoky City. At present prices for raw materials and present rates of labor the mills of Pittsburgh and its allied districts can put down Rolled Iron and Steel in Eastern markets below the cost of production of Eastern mills. That fact has been proven during the past few months. The only consolation is that the Western works are unable to supply the whole demand in times of ordinary business activity.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, }
Pittsburgh, November 21, 1893.

The situation in the Iron and Steel trades as compared with that of, say, one month ago can be stated in a few words: The volume of business is larger, prices are weak and lower. The increased demand is pretty general all along the line, and the further decline in prices also applies to nearly all kinds of Raw and Finished Material. There is no denying the fact that there is little prospect of prices getting better until after the first of the year, and it is somewhat doubtful if there will be much improvement in this direction before spring. Commencing with Pig Iron, it can be said that Bessemer is weaker than one week ago. Billets are also a little easier and \$17.25, Pittsburgh, would be readily accepted. Structural Material is in slow demand, with prices a shade weaker. Plates are fairly active, with competition as keen as ever and prices somewhat demoralized. In other lines there is little change to note, with the exception that Wire Nails are in active demand. Coke is also in better demand, owing to the blowing in of a number of stacks in the Pittsburgh and Mahoning and Shenango Valley districts. Interesting rumors have been afloat here for the past few days concerning a new deal to be made by the Rail makers. Gossip has it that a new agreement has been fixed up, and that the control of two Eastern mills has been secured, and that one or both of these will be closed down for an indefinite period. It is also claimed that a new price has been fixed, said to be \$24 or \$25 at maker's mill, with charges favoring the first named figure. Confirmation of the above could not be secured, but it is claimed that the deal, as outlined above, has been practically closed.

Pig Iron.—While there is a little more metal moving, the condition of the market is far from being satisfactory one to makers. As is well known, there are large stocks of Iron on hand here and in the Mahoning Valley as well, and with the recent increase in production it will take just so much longer to clean this stock up. One prominent concern in this city is said to have about 100,000 tons of Bessemer on hand, while others have from 20,000 to 40,000 tons. There is considerable pressure to sell Pig Iron, and as a consequence prices are somewhat easier, \$11.25, Pittsburgh, for Bessemer having been slightly shaded on some recent transactions. While the market is undeniably weaker, makers claim that the price cannot well go much lower, for the reason that it takes the very best furnace practice to make Bessemer even at our quoted prices. Where a furnace is using a full ton of Coke to a ton of Iron, and is paying market prices for it, and using Ore bought early in the season, it would seem that the claim of the furnace owners that cost price has about been reached is not far from being correct. Gray Forge is in a little better demand, with prices ruling at about \$10.50, Pittsburgh. We quote as follows:

Neutral Gray Forge...	\$10.50 @	cash
All-Ore Mill.....	10.50 @	10.75 "
Bessemer.....	11.10 @	11.25 "
No. 1 Foundry.....	12.50 @	13.00 "
No. 2 Foundry.....	11.50 @	12.00 "

We note a sale of 1000 tons of Bessemer for December at \$11.15, Pittsburgh, and 1500 tons for November and December at \$11.10, Pittsburgh. Also 1000 tons of Gray Forge for December

at \$10.50, Pittsburgh. It is said that some deals are involving a large tonnage of Bessemer, and that some of them may be closed this week.

Billets.—Considerable Steel is changing hands, with prices slightly weaker, although no marked decline has taken place. Buyers are now endeavoring to couple Steel for January, February and March of next year with December Steel, but in only a few instances have they been successful. When a buyer is prepared to place a fair sized order for Steel, with prices and terms of payment satisfactory to maker, it is possible that it would be accepted and deliveries made into the first quarter of the year. However, this is exceptional, as some makers absolutely refuse to sell a pound of Steel at ruling prices for delivery after January 1. They argue that there is greater probability of Steel bringing better figures after January 1 than there is of it selling lower at that time than it is to-day. Prices depend altogether on size of order and terms of delivery. For ordinary business we quote \$17.25 @ \$17.50, at maker's mill. For desirable business our lower quotation could probably be shaded to a slight extent. We note such a sale, being 3000 tons for close delivery at a price equal to \$17.10 at maker's mill. Also a sale of 1000 tons for delivery before January 1, at a price equal to about \$17.35, at maker's mill.

Ferromanganese.—We quote at \$52.50, delivered at buyer's mill, for domestic.

Steel Rails.—The local mill has closed down, and it is announced will undergo repairs. The Light Laid department continues in operation on double turn. Reports are afloat concerning a new agreement among the Rail makers, and if these prove to be true much of the uncertainty now surrounding the Rail situation will be cleared up.

Plates.—There is a better demand, but prices are again a peg lower. A recent sale of Tank Steel made here is said to have been at a price considerably under our lower quotation. We quote as follows: Tank, 1.35¢ @ 1.45¢; Shell, 1.55¢ @ 1.60¢; Flange, 1.65¢ @ 1.75¢; Fire Box, medium quality, 2.50¢ @ 3¢, best quality, 3.50¢ @ 4¢.

Muck Bars.—A fair amount of Muck Iron is being sold, although the demand is much restricted owing to the low price of Steel. We quote best grades Muck Bars at \$20.75 @ \$21.25, delivered at buyer's mill. We note a sale of 500 tons at \$21.10, delivered.

Structural Material.—The building season is practically over, and as a consequence Beams are in light demand. There is a fair amount of bridge material selling, but mills are not pushed by any means. For ordinary lots we quote as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢; Angles and Universal Plates, 1.50¢ @ 1.60¢; Tees, 1.75¢. For desirable orders the above prices could probably be shaded. It is stated that the new wage scale to become operative at the Homestead Steel Works on and after January 1, 1894, carries with it material reductions in wages, especially of high priced labor.

Bars.—The Valley mills have arranged a wage scale with the Amalgamated Association, and a number of them have already started up some departments. The basis of the settlement is \$4.75 for puddling, while in the finishing departments the same concessions were granted by the Amalga-

mated Association as were contained in the wage scale of the National Union of Iron and Steel Workers, signed about two weeks ago by a number of the Valley mills. The mills in the Pittsburgh district who signed the Amalgamated Association scale, which was based on \$5 per ton for boiling, will, of course, participate in all the reductions granted to the Valley mills. The market on Bars is slightly weaker, probably occasioned by the fact that the Valley mills are again becoming producers. We quote Steel Bars at 1.35¢ @ 1.40¢, with Bar Iron extras. For desirable orders our lower quotation would probably be shaded. In the Valley, mills are holding Bars at 1.30¢, half extras.

Merchant Steel.—Mills report only a fair demand, with prices somewhat lower for desirable orders. We quote Open Hearth Spring Steel at 1.90¢ @ 2¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Toe Calk Steel, 2¢; Tool Steel, from 5½¢ upward, according to quality.

Wire Nails.—The demand for Wire Nails continues active, some very large shipments having been made recently by Pittsburgh mills and those further west. Notwithstanding the active demand prices show no improvement, and we continue to quote at \$1.25 in carload lots at mill. As stated last week, this price would be slightly shaded by some mills for round lots. The demand for Cut Nails is also very satisfactory and \$1 at mill, with the usual averages, is being maintained.

Barb Wire.—There is no improvement in demand, and we continue to quote Four-Point Galvanized at \$2.20 @ \$2.25 in carload lots at mill, with the usual advances for less than carload lots. We quote Plain Wire at \$1.50, for Nos. 6 to 9, in carload lots.

Pipes and Tubes.—We are advised that there is a slightly better demand for Pipes and Tubes, and the outlook for further improvement in this direction is promising. At the plant of the American Tube & Iron Company, at Middletown, Pa., the lap weld department is on full and the butt weld department to half capacity. The plant of this firm at Youngstown, Ohio, is also being operated to about half capacity. The plant of the Duquesne Tube Works Company is also in operation to nearly full capacity, with good prospects of this being kept up through the winter months.

Skelp Iron.—There is a slightly better demand for Skelp Iron, and we quote Grooved at 1.37½¢ @ 1.50¢, and Sheared at 1.50¢ @ 1.60¢, according to order.

Coke.—There is a slightly better demand for Furnace Coke, particularly from the Pittsburgh and Valley districts. The shipments to Eastern points also show a slight increase. For the week ending November 11 there were 6485 ovens in the Connellsville region in blast, and 11,005 idle, with a total estimated production for the week of 57,755 tons. Compared with the previous week this was a net gain of 525 active ovens and an increase in production of 2475 tons. Prices show no improvement, and we continue to quote Furnace Coke at \$1.10 per ton, f.o.b. cars, in region, while Foundry Coke is ruling at \$1.50 to dealers and 1.65 to consumers. It is stated that one or two operators in the region have recently shaded our quotations on Foundry Coke to slight extent.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 21, 1893.

Certain movements have been made in various branches of the Iron and Steel trades which indicate that the extreme point of depression has been reached, if not actually passed. There is no absolute improvement in prices, neither is there any very decided increase in the demand, yet the feeling is becoming more confident every day. A curious feature in this connection is that prices of Finished Material have reached not only unprecedented, but startlingly low figures. It is currently reported and generally believed that Pittsburgh mills have taken orders for Plates subject to very stringent requirements at a good deal less than 1.35¢, delivered. There is hardly a pretense of getting more than 1.45¢ to 1.50¢ for any good sized lot, while those who made the inquiries claim to have beaten the inside figure so far that local mills had no chance whatever. Low water mark must certainly have been reached in Finished Material, even if the price (said to be 1.2¢) was f.o.b., instead of delivered. The most important event of the week, however, is the new deal among the Steel Rail companies, by which prices for 1894 are definitely fixed at \$24, f.o.b., or \$25, tidewater. There will be no deviation from these figures, and, as the control will be closer than under any former agreement, there can be no misunderstanding as to the price of Rails during the period mentioned. The next strong feature is the gradual development of a feeling that Pig Iron has seen its lowest figures. Taken as a whole, therefore, there is an intuitive belief that the beginning of 1894, and possibly before the close of 1893, the trend of the market will be the reverse of what it has been during the past two or three years. There is nothing definite in sight beyond what is above mentioned, and nothing to warrant the expectation of any decidedly aggressive movement, but a gradual return to normal conditions seems to be pretty well assured.

Pig Iron.—No material change can be noted in this interest, unless it be that sellers appear to have better control of the market. Good buyers can get all the Iron they want at last week's prices for reasonably early deliveries, but for long dates sellers either quote slightly higher figures or postpone acceptance of bids that have been made to them. They may yet decide to accept the offers; but be that as it may, holders are clearly not as demoralized as they were some time ago, or they would accept almost any offer that they could get. The movement may be a little premature, but there is a strong impression that the ultimate outcome will be a rising market. For the present quotations for Philadelphia deliveries may be given as follows:

No. 1 Foundry	\$13.75 @	\$14.25
No. 2 Foundry	13.00 @	13.25
Standard Gray Forge	12.00 @	12.50
Ordinary Gray Forge	11.50 @	11.75

Steel Billets.—Very little business has been done in this vicinity, as consumers were not inclined to place orders except for such small lots as they are likely to require during the balance of the year. Asking prices are \$20 @ \$20.25, delivered, with a chance that considerably better could be done on firm offers for good sized lots. It is not clear what effect the new arrangement among the Rail mills will have on the Billet trade, but most likely it will not

affect it at all. Since writing the above we are advised of a sale of 1000 tons at less than \$19.50, delivered to near by mill.

Finished Material.—The demand has been somewhat heavier, and nearly all the mills are doing better than at any time since July, but, as already noted, the business is done at terribly demoralized prices. It is difficult to account for such wanton slaughter, but when certain of the Pittsburgh mills want business they offer to take it at prices and on terms which leave no alternative to their competitors but to stand aside and let it go West. This applies not only to Plates and Sheets, but to every class of rolling mill material. On such a market it is impossible to quote prices with any degree of exactness, but for small lots asking prices are about as follows:

Grooved Skelp, delivered.....	1.45¢ @	1.50¢
Best Refined Bars.....	1.45¢ @	1.55¢
At interior points.....	1.35¢ @	1.40¢
Tank Steel.....	1.45¢ @	1.55¢
Heavy Plates.....	1.50¢ @	1.60¢
Shell.....	1.60¢ @	1.75¢
Flange.....	1.90¢ @	2.00¢
Angles.....	1.60¢ @	1.70¢
Beams and Channels.....	1.75¢ @	1.90¢

Old Material.—There is so little change that the reports of several preceding weeks might almost be repeated verbatim. Asking prices are about as follows, with a fair amount of business, chiefly at inside figures:

No. 1 Wrought Scrap, delivered.....	\$12.00 @	\$13.00
Machinery Cast, delivered.....	10.00 @	11.00
Heavy Steel Scrap, delivered.....	12.00 @	13.00
Old Iron Rails, delivered.....	14.00 @	14.50
Old Street Rails, delivered.....	15.50 @	16.00
Wrought Turnings, delivered.....	10.00 @	11.00
Cast Borings, delivered.....	6.00 @	7.00
No. 2 Light Scrap.....	6.00 @	7.00

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 22, 1893.

The market here remains in an unsatisfactory condition. Any improvement recently noted seems to have been only spasmodic. An increased demand is followed by a relapse into dullness, and a slight firmness in price seems to be immediately followed by decided weakness. The whole machinery of trade is in bad shape, and now and then seems to slip a cog or two. The past week has been dull in all lines.

Pig Iron.—The drop in Southern freight rates has disappointed all interested, as it brought no improvement in the volume of business. Consumers are only purchasing according to their necessities, and few are inclined to anticipate their requirements to any extent, even if the bait of lower prices is held out. The sellers of both Southern and local Coke report the week very quiet. The only business of any consequence seems to be in Ohio Softeners and Lake Superior Charcoal. The demand for Ohio Soft Irons has made marked improvement within the last few weeks, but this is evidently owing to the scarcity of local brands of Soft Iron, which for a long while has occupied the local field to the exclusion almost entirely of Ohio brands. The Charcoal Iron market is irregular. Some makers are getting mere anxious to sell and transactions which have recently come to light are on a somewhat lower basis. Bankrupt stocks are still being offered, and

these tend to depress the market. Quotations are now as follows for cash:

Lake Superior Charcoal.....	\$15.50 @ \$16.00
Local Coke Foundry, No. 1.....	13.50 @ 14.00
Local Coke Foundry, No. 2.....	12.75 @ 13.00
Local Coke Foundry, No. 3.....	12.25 @ 12.75
Local Scotch.....	14.00 @ 14.50
Ohio Strong Softeners No. 1.....	15.50 @ 16.00
Southern Silvery, No. 1.....	@ 14.25
Southern Silvery, No. 2.....	@ 13.75
Southern Coke, No. 2.....	11.85 @ 12.10
Southern Coke, No. 3.....	11.10 @ 11.35
Southern, No. 1, Soft.....	11.85 @ 12.10
Southern, No. 2, Soft.....	11.10 @ 11.35
Tennessee Charcoal, No. 1.....	16.00 @ 16.50
Southern Gray Forge.....	10.60 @ 10.85
Alabama Car Wheel.....	18.25 @ 18.50
Jackson County Silvery.....	16.50 @ 17.00
Other Ohio Silvery.....	15.00 @ 15.50

Bars.—Trade in Bar Iron and Bar Steel is of a better character than in almost any other line. The demand is general, showing that manufacturing consumers are again at work. There are now few concerns using Bars that are entirely shut down. Even the car works are getting more business, although the orders are seldom for more than 100 cars. Bars are irregular, owing to the efforts made by local mills to control as much business as possible and prevent outside manufacturers from capturing trade which is regarded as belonging here. Prices in this way range from 1.35¢ to 1.45¢, Chicago, half extras, depending upon the location of the mill. The Valley mills appear to be standing at 1.30¢ at mill, and are getting some business at this rate. Soft Steel Bars are the subject of considerable competition, with prices ranging from 1.45¢ to 1.55¢, Chicago, according to the character of the order. Jobbers report a better demand from store, but prices are not so firmly held, and while the usual quotations are 1.60¢ @ 1.70¢ for Bar Iron and 1.65¢ @ 1.75¢ for Soft Steel, these rates are shaded according to circumstances.

Structural Material.—Business in this line is quiet, with no change in prices. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ \$ 100 above those prices.

Plates.—Dealers report a better trade this month than last. Consumers have begun to anticipate their wants to some extent, but their purchases are not of large quantities. Mill orders are scarce. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.62½¢ @ 1.70¢; Shell Steel, 1.82½¢ @ 1.90¢; Flange Steel, 2.2½¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2.20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Trade is quiet, as the present period is now between seasons and not much is being done in mill orders. Prices continue at about 2.75¢, Chicago, for No. 27 Common, and 75 % off for Juniata Galvanized, mill shipment. Small lots from stock are selling at 2.90¢ @ 3¢ for No. 27 Common, and 70 % @ 70 % and 7½ % for Juniata Galvanized. Sheet Copper is quoted at 35 % off in large lots and 30 % off in small lots.

Merchant Steel.—Nothing of any special moment has transpired in this line. The demand is moderately fair and prices are unchanged. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.6¢; Ordinary

Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—The Joliet works opened on Monday after an idleness of 11 months. No large inquiries are in the market for Steel Billets and quotations continue at \$19.25 @ \$19.50, Joliet.

Rails and Track Supplies.—Railroads are not asking quotations on Steel Rails and it is expected that they will not be in the market until some time next month. Prices here are expected to be \$25 for standard Rails, as the result of the agreement reached at the meeting of the manufacturers held last week in New York City, but the announcement is not made officially. Almost nothing is doing in Fastenings, and quotations are nominally continued at 1.50¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2.6¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—A sale of Old Iron Rails is reported at a shade under \$14, Chicago. The sale was made by a dealer, which indicates that low values on this class of material are now recognized. Railroad companies are also more easy in their views, and some of them have offered Rails within the past week at \$14. Old Steel Rails are selling at \$7.50 @ \$10, according to length. A considerable movement has taken place in Old Car Wheels, but entirely of a speculative character. Railroads have sold large quantities at prices varying from \$9.50 to \$10, but in no case do consumers appear to have taken hold.

Scrap.—The movement in Old Material has been fair. Quotations are maintained at old figures: No. 1 Forge, \$10; No. 1 Mill, \$8; Sheet Iron, \$4.50; Pipes and Flues, \$8; Axles, \$16; Horseshoes, \$11; Fish Plates, \$12; Spikes and Bolts, \$10; Cast Borings, \$4.50; Wrought Turnings, \$6.50; Axle Turnings, \$8; Heavy Cast, \$9.50; Stove Plate, \$7.75; Malleable Cast, \$3; Mixed Steel, \$7, gross ton; Leaf Steel, \$14.50.

Metals.—A little more is doing in Lake Copper, with the price unchanged at 10½¢ for carload lots. Inquiries for casting brands are somewhat better, and quotations are asked for future deliveries. Standard brands continue to be quoted at 9½¢. Spelter is reported in better condition. Owing to the large exports now being made, producers are quoting on a basis of 3.65¢, Chicago. Pig Lead has been sold to the extent of some 600 tons, and prices are steadily maintained at 3.30¢ @ 3.3½¢, according to quantity.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts.,
CINCINNATI, November 22, 1893.

The volume of business in Pig Iron has been comparatively small during the week. The Iron Pipe works, having previously supplied their wants for a long time, have not been in the market and consumers did not want much, but stove works and agricultural works have bought to a fair extent, and although their orders seldom reached 1000 tons in any one instance, yet in the aggregate they were larger than usual of late, but no better prices were realized. In fact, the tone of the market is easier, for purchases are being made for the first half of next year at the same rates as current for spot delivery. No. 1 Foundry is especially weak, there being little demand for that grade, and

sales have been made as low as \$9.50 \$ ton, f.o.b. Birmingham. The other grades are well sustained, there being a fair demand for No. 2 Foundry and for Gray Forge. The trade contends that the outlook, from a statistical point of view, is more favorable and that there should be an early improvement in prices, but as long as buyers can supply their wants at the current low rates they pay little attention to sentimental views. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$12.25 @ \$12.50
Southern Coke, No. 2.....	10.75 @ 11.00
Southern Coke, No. 3.....	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1.....	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 14.75
Lake Superior Coke, No. 1.....	15.00 @ 15.25
Lake Superior Coke, No. 2.....	14.00 @ 14.25
Hanging Rock Charcoal, No. 1.....	18.50 @ 19.00
Hanging Rock Charcoal, No. 2.....	17.50 @ 18.00
Tennessee Charcoal, No. 1.....	14.00 @ 14.25
Tennessee Charcoal, No. 2.....	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	17.75 @ 18.00
Lake Superior Car Wheel and Malleable.....	17.00 @ 17.25

Forge.

Gray Forge.....	9.75 @ 10.00
Mottled Coke.....	9.50 @ 9.75

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, November 22, 1893.

Pig Iron.—The improvement noted in our last report continues, and inquiries are beginning to result in some business. Consumers in nearly all lines report a steady trade in small lots, which in the aggregate makes a good showing. There is less pressure to sell, as the furnaces now in blast appear able to take care of themselves, and are apparently not compelled to sell their product to keep going. A steady trade is anticipated from now until after the holidays, when a revival is confidently expected. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$13.25 @ \$13.50
Southern Coke, No. 2 Foundry.....	11.50 @ 11.75
Southern Coke, No. 3 Foundry.....	10.75 @ 11.00
Southern Gray Forge.....	10.25 @ 11.50
Southern Car Wheel.....	17.25 @ 18.25
Lake Superior Car Wheel.....	16.50 @ 17.00
Ohio Softeners.....	16.00 @ 16.50

Bar Iron.—Jobbers continue to report an active demand at 1.75¢ from store. Mills are not running very full and competition is brisk to secure trade. Some low prices have been made to a few special users of Iron, which, while very low, hardly constitute the market. Mills quote 1.45¢ for carload lots, half extras, f.o.b. cars East St. Louis.

Barb Wire.—The demand for Barb Wire continues to be of good volume and prices are unchanged. Mills quote Painted in carload lots at \$2 @ \$2.05 and Galvanized at \$2.40 @ \$2.45. Jobbers ask \$2.10 @ \$2.15 for Painted, with 40¢ \$ hundredweight additional for Galvanized.

Wire Nails.—A fair demand is reported for Wire Nails, but prices do not seem to stiffen much. Mills quote \$1.40 in carload lots to jobbers. Smaller lots are quoted at \$1.45 @ \$1.55, according to quantity.

Rails and Track Supplies.—There is a good trade in Track Supplies at unchanged prices, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Old Rails are of-

ferred at \$14, but buyers are scarce. Steel Rails are in a mixed condition, and all sorts of prices are current. A sale is reported of 4000 tons to the Jacksonville and Southeastern Railroad at a price less than \$21, f.o.b. Pittsburgh. Locally trade is dull, and \$23 @ \$24 50 seems to be the selling price.

Pig Lead.—This metal is in an unsettled condition. A sale is reported of 300 tons made to-day at 3.20¢, but offerings late to-day at 3.17½¢ did not find buyers. There is a weak undertone to the market, which will doubtless soon make itself felt in prices.

Spelter.—There is no change to report in Spelter. Offerings are made at 3.40¢, but sales are limited to carload quantities, even the largest buyers refusing to buy heavily at to-day's prices.

Metal Market.

Copper.—Regarding the alleged late sales of Ingot by the Calumet & Hecla Company, no official information is imparted, but facts came out from outside sources going to show that about 5,000,000 lb were disposed of to exporters and that the price was 9½¢ @ 10¢. Rumor has it that sales have also been made to home consumers at similar price, with deliveries running up to March 1, if not further ahead, and that some business has been done at 10¢. The latter price is now bid for round lots and most sellers have advanced their limits to about 10½¢. In this connection it is interesting to note that bids on the Metal Exchange of as high as 10.15¢ were made for December and 10.25¢ for January and February delivery, with some indication that prominent interests have a reason to place values on a higher plane. While there would thus appear to be something in the nature of substantial firmness to the market for Lake Superior product, the cheaper varieties of Copper merely hold their own in price and meet with only ordinary sales. Electrolytic may be secured at 9½¢ @ 9¾¢, and common casting stock at 9½¢ @ 9¾¢, according to brand and quantity.

Pig Tin.—Prices have been moved a little higher, or to 20.65¢ @ 20.70¢ for present or next month delivery. Comparatively little Tin has changed hands in a speculative way, however, and regular consumptive movement is believed to have been below the average for the season. The turn for the better in prices, as a matter of fact, has the appearance of being what may be termed a nicely timed natural reaction, engineered by some few prominent operators, with nothing more substantial behind the maneuver than the fact that this market is still a good deal below the level of Europe. "Short" interest in the speculative branch of the market here seems to have been pretty well eliminated, and the outside holdings are believed to be comparatively small.

Pig Lead—Sales have been reported here to the extent of about 750 tons common domestic for delivery during the balance of the year. Some lots went at 3.40¢ for November, but the greater portion of the business was in December delivery at 3.42½¢ @ 3.45¢. At this writing the offering is moderate, and while consumers manifest extreme indifference, the demand from other quarters, along with more or less re-

served offering, serves to keep the market quite firm in tone.

Spelter.—The purchases of this metal have been confined chiefly to single carloads at about 3.70¢ for ordinary Western brands deliverable here during the next six weeks. In volume the business was moderate and the demand was very tame. It is stated, however, that very few smelters will take orders at current prices, stating that their probable output for the balance of the year is closely sold up and that present prices leave no margin of profit. Hence 3.80¢ is asked for January and later deliveries, although moderate quantities have been closed out for earlier delivery at the price above quoted.

Antimony.—Business has been of ordinary character, yet fair all told and sufficient to hold prices steady at 9½¢ @ 9¾¢ for Hallet's and 10½¢ @ 10½¢ for Cookson's.

Tin Plate.—There has been some improvement in the demand for ordinary Cokes for future delivery, and enough sellers acceded to buyers' terms to bring about a fairly good volume of business. Interest in futures is tamer than usual at this season of the year, however, and, with spot dealings on strictly perfunctory lines, the market shows no improvement in tone. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.30; J. B. grade, do., \$5.35; Bessemer full weight, \$5.35; light weights, \$4.95 for 100 lb, \$4.85 for 95 lb, \$4.70 @ \$4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60; Siemens Steel, IC basis, \$5.65; IX basis, \$6.75 @ \$7. Charcoals—Melyn grade, IC, \$6.37½ @ \$6.50; Crosses, \$8; Allaway grade, IC, \$5.60; Crosses, \$6.75; Grange grade, IC, \$5.75; Crosses, \$6.85. Charcoal Terns—Worcester, 14 x 20, scarce; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.50; do., 20 x 28, \$14.75; Dean grade, 14 x 20, \$5.35; do., 20 x 28, \$10.50 @ \$10.60; D. R. D. grade, 14 x 20, \$5.15; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.32½ @ \$5.35; do., 20 x 28, \$10.40; Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.60; do., 20 x 28, \$8.87½.

The monthly production of Copper in the United States since July, 1892, has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.			
	Reporting mines.	Outside sources.	Total.
1892.	Gross tons.	Gross tons.	Gross tons.
July.....	9,294	924	10,218
August....	10,807	870	11,677
September..	9,710	994	10,704
October....	9,668	1,289	10,957
November..	9,888	1,036	10,924
December..	9,872	1,174	11,046
Total six months	59,239	6,267	65,526
1893.			
January....	9,187	989	10,176
February...	8,213	1,042	9,245
March.....	9,065	1,321	10,386
April.....	11,775	1,042	12,817
May.....	12,706	1,042	13,748
June.....	11,524	1,042	12,566
Total six months	62,470	6,478	68,988
1893.			
July.....	11,049	1,042	12,091
August.....	11,745	1,042	12,787
September..	11,750	1,042	12,792
October....	11,503	1,042	12,545

The product of the foreign reporting mines and the United States exports were as follows:

Foreign reporting mines.		United States exports.	
1892.	Gross tons.	1892.	Gross tons.
July.....	6,358	July.....	3,450
August.....	6,863	August.....	1,545
September.....	5,478	September.....	1,458
October.....	6,476	October.....	3,144
November.....	6,789	November.....	3,897
December.....	7,666	December.....	4,486
Total six months... 39,655		Total six months... 17,989	
1893.		1893.	
January.....	5,736	January.....	3,171
February.....	6,762	February.....	1,515
March.....	6,896	March.....	2,384
April.....	6,913	April.....	3,450
May.....	6,806	May.....	4,482
June.....	7,935	June.....	5,109
Total six months... 41,048		Total six months... 20,361	
1893.		1893.	
July.....	6,095	July.....	7,181
August.....	7,057	August.....	9,127
September.....	6,303	September.....	16,131
October.....	7,081	October.....	11,478

New York.

Office of *The Iron Age*, 96-102 Reade street, {
NEW YORK, November 22, 1893.

Pig Iron.—As indicating that low prices for Pig Iron are attracting attention in distant quarters, the fact is cited that an English house has bought 5000 tons of Alabama Coke warrants at the reported price of \$7.50 for No. 3, equivalent to \$7.25 at furnace. Consumers are showing but little interest in the market, although bargains keep cropping up. We quote: Northern brands, \$14 @ \$15 for No. 1; \$13 @ \$14.25 for No. 2; \$12.25 @ \$12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, \$13 @ \$14 for No. 1; \$12 @ \$13 for No. 2; \$11.50 @ \$12.25 for No. 3; \$11.75 @ \$12.25 for No. 2 Soft, and \$12.25 @ \$12.50 for No. 1 Soft. Gray Forge is \$11.25 @ \$12.

Spiegeleisen and Ferromanganese.—In the absence of business we quote: Foreign Spiegeleisen, 10 % @ 12 %, \$21.50 @ \$22, and 20 %, \$25.50 @ \$26, on cars, Jersey City, and Ferromanganese, \$55 @ \$55.50.

Billets and Rods.—There are indications that the requirements of the largest consumers have been covered for some time to come by a Pittsburgh mill at a very low price. Although Foreign Billets are being offered very cheap, buyers do not take hold. We quote nominally: Domestic Billets, \$20.25 @ \$22.50, and foreign Billets, \$28 @ \$28.50, tidewater; domestic Wire Rods, \$28 @ \$29, and foreign Rods, \$39.50 @ \$40, tidewater.

Steel Rails.—We refer elsewhere to the new arrangement which has been perfected by the Rail mills, which promises to hold the market steady for along time to come. During the brief period during which low offerings were being made very little business in the aggregate was done. Probably 25,000 tons would cover the whole. It is hardly to be expected that buyers will take hold until the present situation is thoroughly understood. The price now named is \$24 at Eastern mills and \$25 at Western mills for 1894 delivery.

Track Material.—We quote as follows for small lots: Spikes, 1.75¢ @ 1.90¢; Fish Plates, 1.35¢ @ 1.50¢; Track Bolts, Square Nuts, 2.20¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The market is practically bare of orders of any consequence. The prices at which

recent work has been taken are reported to have been exceptionally low. There has been some movement in Bars, some of the dealers buying for stock. Something has been done in Hoops. We quote nominally: Beams up to 15-inch, 1.70¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.65¢ @ 1.80¢; Universal Mill Plates, 1.60¢ @ 1.75¢; Tees, 2¢ @ 2.15¢; Channels, 1.70¢ @ 2¢, on dock. Steel Plates are 1.55¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ @ 45-lb bundle, at mill.

Old Material.—We note sales during the past week of 500 tons of special make Old Iron Rails at \$12.50, and in the aggregate 1000 tons of Old Steel Rails at \$8 @ \$9, according to delivery. The supply of this class of material is exceptionally heavy. No. 1 Scrap Iron has been offered at \$9 @ \$10. The demand is very light. Old Car Wheels are very difficult of sale.

Financial.

Business conditions during the week have shown a continuance of improvement, which, although not as rapid as some persons expected or hoped for, is yet sufficiently decided. The effects of the severe financial depression of the summer are, naturally, still being keenly felt in many quarters, and serve to operate against anything beyond a very gradual recuperation. In general business circles, nevertheless, a decidedly more healthy and hopeful tone prevails; and all indications continue to be as favorable as could reasonably be expected. An improvement in the industries of the country is manifest from late trade reports which mention, almost uniformly, a very material increase in the number of mills and factories resuming work, as compared with those shutting down, or restricting operations. Western iron and steel mills and Eastern textile factories in particular make a favorable showing in that respect for the week, some of the largest producing concerns being reported as resuming after prolonged shut downs. In general, however, industries are proceeding on unusually conservative lines, awaiting the general revival of demand from consumers. The present is naturally the quiet season of the year in most lines of business, and it is unlikely, save in the case of some special industries, that much new enterprise will develop until after the January settlements are made. Uncertainty as to the outcome of tariff legislation, too, is an important factor in the industrial situation. Numbers of new enterprises will be held in check until it is certain what will be done in this field; and buying all over the country will be confined to little more than absolute requirements, until producers and consumers know the new conditions to which they will have to adjust themselves.

A favorable feature of the week are the reports of improvement in collections. November payments are on all hands said to be far more satisfactory than was expected. Monetary difficulties are rapidly disappearing. Yet the accumulation of vast sums of surplus reserves by the banks at all the prin-

cipal money centers is evidence of a lack of enterprise and speculation, with consequent stagnation in business. The receipts of currency by the New York banks from interior points continue extremely heavy and have served to pile up the already enormous reserve held by them to unprecedented proportions. Last Saturday's bank statement showed a further gain in cash of nearly \$10,000,000, bringing the surplus reserve up to \$65,500,000 above legal requirements. This is the largest ever known and is specially remarkable for the rapidity with which it has been accumulated. The greatest sum ever held hitherto was \$64,000,000 in 1885, but that took 12 months to attain its magnitude after the panic of May, 1884, whereas the present accumulation of reserve has taken but three months. The unfavorable feature of the bank statement was a decrease of \$1,253,200 in the volume of loans. As this condition cannot have been brought about by any unwillingness on the part of the banks to invest their superfluous funds in such profitable investment, it furnishes unquestionable evidence of the existing stagnation in trade and speculation. The following are the comparative statements of November 11 and November 18.

	Novem- ber 11.	Novem- ber 18.	Differences.
Loans...	\$402,988,000	\$401,732,800	Dec. \$1,253,200
Specie...	98,644,900	99,924,300	Inc. 1,279,400
Legal tend.	73,118,800	81,717,200	Inc. 8,598,400
Deposits...	455,739,900	454,684,100	Inc. 8,944,200
Circulation...	14,356,300	14,076,600	Dec. 279,700

The following shows the relation between the total reserve and the total deposits at the respective dates:

			Increase.
Specie.....	\$98,644,900	\$99,924,300	\$1,279,400
Legal tenders.	73,118,800	81,717,200	8,598,400
Reserve....	\$171,763,700	\$181,641,500	\$9,877,800
Reserve required against deposits.	113,934,975	116,171,025	2,236,050
Surplus..	\$57,828,725	\$65,470,475	\$7,641,750

Money continues extremely easy. In the call loan market rates have ranged from 1½ to 2%, averaging 1½%, with but small demand from borrowers. The supply of time loans is so far ahead of demand that borrowers can almost dictate their own terms. Accommodation can be gotten on choice securities for almost any period for 3%, while more than 4% is seldom asked for any other securities or periods. There is a scarcity of commercial paper, for which the inquiry is much in excess of offerings. City institutions are said to be in the market competing for good paper, every acceptable note offered finding ready sale. Choice indorsed receivables are about 4% @ 4½%, and other bills 5% @ 5½%. There are said to be large offerings of loans on New York real estate at 5%.

Business on the Stock Exchange has not attracted much outside interest during the week. The public still hold off and the market remains a purely "professional" one. It is, however, showing a steadier and more satisfactory feeling, and the market is getting into good shape for legitimate investment business so soon as the public is ready for it. The stock market toward the end last week showed a narrow volume of dealings, closing with some degree of firmness all along the line. The leading feature of Friday's business was a sharp fall in Reading shares and bonds, with active dealings in that stock. The movement was brought about by rumors of an unsatisfactory statement by the expert accountant who has been examining the books of the corporation. It

was intimated that from \$10,000,000 to \$18,000,000 would be required to place the company on a secure basis. Later intelligence has not, however, confirmed the report. At the close of Saturday's business few stocks showed more than a fractional change. On Monday it was thought that the strike on the Lehigh Company's lines would have an unfavorable effect on the market. This was not, however, the case, although the company's stock fell several points on the Philadelphia Exchange. The market that day was somewhat dull and uncertain. Rumors of tariff revision served to weaken a number of industrial issues; and National Cordage broke sharply on unfavorable rumors reflective the reorganization of that combination. Tuesday saw a marked increase of activity and higher prices for both stocks and bonds. Sugar, which represented a third of the dealings, advanced over 4 points. National Cordage recovered on the publication of the reorganization scheme. All the granger stocks were strong, and some active. The rumored reorganization of the Union Pacific on a satisfactory basis served to tone that stock; and the general market closed strong at the highest prices of the day. London has been a larger buyer this week. The following list exhibits the extreme fluctuations of the stocks named during the week, with closing quotations on November 23:

	High- est.	Low- est.	Closing, Nov. 22.
Am. Sugar Ref.....	96¾	91¾	95¾
Atchison, T. & S. Fé....	20½	19	19¾
Balt. & Ohio.....	71	69¾	70¾
Chicago Gas.....	65	61	64
Chic., B. & Q.....	81¾	78¾	80¾
Chic., Mil. & St. Paul....	65¾	62¾	65¾
Chic., Rock Isl. & Pac....	69¾	66	6¾
Del. & Hudson.....	137½	130½	126½
Del., Lack & Western....	170	166½	169½
Gen. Electric.....	42	35½	35¾
Lake Shore.....	128¾	127	128¾
Louisville & Nashville....	49½	47½	49½
Manhattan.....	129	125	129
Missouri Pacific.....	26½	24	26½
National Lead, Common.	27½	26¾	27½
New Jersey Central.....	116¾	115	115
New York Central.....	103	101½	103
N. Y., L. E. & Western.	15	13¾	14¾
Northern Pacific, Pfd. .	22¾	21¾	22¾
Philadelphia & Reading..	22¾	19½	20¾
Richmond & West Pt., Terml.....	3½	3	3¾
St. Paul & Omaha.....	37¾	36¾	37¾
Union Pacific.....	19¾	17¾	19¾
Western Union.....	90	85½	89¾

Government bonds have been strong and higher for the 4s. Latest quotations were as follows:

	Bid.	Asked.
2s, 1891, registered.....	91½	.....
4s, registered.....	112½	113½
4s, coupon.....	112½	113½

The great plethora of money has induced considerable investment business in first-class railway bonds. Transactions in the general bond market have been much larger the last few days than for some time, and prices have hardened considerably under the active and urgent demand. The revival of interest has, indeed, been quite remarkable, and the business well distributed over the whole list of issues.

Sterling exchange has been strong, with a very moderate supply of commercial bills and a good demand from remitters. Posted rates were advanced toward the close of last week, and, except for a slight weakening on Monday, the advance has been maintained. As there will, however, be important shipments of bonds to London this week, the chances are that exchange will again be lower in the immediate future. Actual business was done on Wednesday at

\$4.82½ @ \$4.83 for 60 days; \$4.85½ @ \$4.85½ for demand; \$4.85½ @ \$4.86 for cables, and \$4.82 for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 50 discount, bank par; Charleston, buying ½ discount, selling ½ premium; San Francisco, sight 5, telegraph 10 premium; Savannah, buying par; selling ½ premium; Chicago, 75 premium; St. Louis, 90 premium.

Bar silver is quoted in London at 32½ pence per ounce and in New York at 70½¢. Heavy shipments of the metal have been made from this port during the week. It is shown that one result of the suspension of silver purchases by the Government will be a large contribution to our foreign trade. The 54,000,000 ounces taken by the Treasury each year, valued at 70¢ per ounce, should swell the annual exports to the extent of \$37,800,000 and give increased ability to command gold from Europe as needed.

The weekly railway statements of earnings for November show some encouraging signs. Several lines exhibit an increase of receipts over 1892, and it is believed that, especially with the Vanderbilt lines, the net earnings for the entire current year will show a gain over those of last year, while it is said that some companies will be prepared to declare larger dividends. A number of Western managers, now in New York City, give encouraging forecasts of the transportation outlook for their lines.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, November 22, 1893.

The market for Pig Tin has been irregular and weak, with sales recorded at as low as £74. 17/6 for prompt delivery of Straits under the influence of free selling by importers and dealers. From this point there was a reaction of 12/6, due chiefly to covering of "short" accounts and some stimulus to buying by the improvement in the silver market, together with the announcement of smaller Straits shipments during the first half of the month. At the close the market was quiet, with Straits quoted at £75. 7/6 for prompt delivery and £76 for three months' futures.

Copper prices have undergone hardly any change and dealings have been small. Outside speculation has been very light, apart from some purchases for American account, chiefly from tired holders. Consumers are very indifferent buyers and the majority claim to be carrying very large stocks. Supply on the spot increased 300 tons during the first half of the month. The visible supply in Europe increased 297 tons during the same period. Furnace material has been rather difficult to sell and prices are easier, although not quoted lower. The turn in the coal trade dispute has had no effect thus far upon the metal markets. Late quotations on Merchant Bars were £42. 5/ for prompts and £42. 15/ for three months' futures. Best selected English, about £45. 15/ @ £46.

Tin Plate business has been dull, and the situation of the market is unchanged. Prices are rather weak throughout. Black Plate is also quiet. Finished Bessemer is offered now at £8 in Swansea. Liverpool quotations for Plates are as follows:

IC Charcoal, Alloway grade.....	12/6 @ 13/
IC Bessemer Steel, Coke finish.....	11/3 @ 11/6
IC Siemens.....	11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20.....	11/3 @ 11/6
Charcoal Terne, Dean grade.....	11/ @ 11/3

Pig Lead has met with rather slow sale, and the market is easier at £9. 12/6 for Soft Spanish.

Spelter has been in very fair demand and the market is quite firm at £17. 2/6 for ordinary Silesian.

Steel mills at Barrow have resumed work, owing to better orders for some lines of goods. There is no improvement in prices or demand, however, and prices continue unsettled in the face of some improvement in warrant iron prices. Last dealings in warrants were at 42/8 @ 42/9 for Scotch, 34/7½ for Cleveland, and 44/6 for Hematite.

Cairene Houses.

The foundation walls, to the height of the first floor, are cased externally, and often internally, with the soft calcareous stone of the neighboring mountain. The surface of the stone, when newly cut, is of a light yellowish hue, but its color soon darkens. The alternate courses of the front are sometimes colored red and white, particularly in large houses, as is the case with most mosques. The superstructure, the front of which generally projects about 2 feet, and is supported by corbels or piers, is of brick and often plastered. The bricks are burnt, and of a dull red color. The mortar is generally of mud in the proportion of one-half, with a fourth part of lime, and the remaining part of the ashes of straw and rubbish. Hence the unplastered walls of brick are of a dirty color, as if the bricks were unburnt. The roof is flat and covered with a coat of plaster.

The door of a private house in Cairo is often ornamented; the compartment in which is the inscription, and the other similarly shaped compartments, are painted red, bordered with white; the rest of the surface of the door is painted green. The inscription, "He" (i. e., God) "is the excellent Creator, the everlasting," is seen on many doors, but is far from being general; it is usually painted in black or white characters. Few doors but those of large houses are painted. They generally have an iron knocker and a wooden lock, and there is usually a mounting stone by the side.

WINDOWS.

The ground floor apartments next the street have small wooden grated windows placed sufficiently high to render it impossible for any person passing by in the street, even on horseback, to see through them. The windows of the upper apartments generally project 1½ feet or more, and are mostly formed of turned wooden lattice work, which is so close that it shuts out much of the light and sun and screens the inmates of the house from the view of persons without, while at the same time it admits the air. They are generally of unpainted wood, but some few are partially painted red and green and some are entirely painted. A window of this kind is called a "rôshan," or more commonly, a "meshrebueh," which latter word has another application, which will be mentioned below. Sometimes a window of the kind above described has a little meshrebueh, which

somewhat resembles a rôshan in miniature, projecting from the front or from each side. In this, in order to be exposed to a current of air, are placed porous earthen bottles, which are used for cooling water by evaporation. Hence the name of "meshrebueh," which signifies "a place for drink" or "for drinking." The projecting window has a flat one of lattice work or a grating of wood or of colored glass immediately above it. This upper window, if of lattice work, is often of a more fanciful construction than the other, exhibiting a representation of a basin with a ewer above it, or the figure of a lion, or the name of Allah, or the words "God is my hope," &c. Some projecting windows are wholly constructed of boards and a few have frames of glass in the sides. In the better houses also the windows of lattice work are now generally furnished with frames of glass in the inside, which in the winter are wholly closed, for a penetrating cold is felt in Egypt when the thermometer is below 60° F. The windows of inferior houses are mostly of a different kind, being even with the exterior surface of the wall. The upper part is of wooden lattice work or grating, and the lower closed by hanging shutters, but many of these have a little meshrebueh for the water bottles projecting from the lower part.

HIGHT OF HOUSES.

The houses in general are two or three stories high, and almost every house that is sufficiently large incloses an open, unpaved court, called a "hôsh," which is entered by a passage that is constructed with one or two turnings, for the purpose of preventing passengers in the street from seeing into it. In this passage, just within the door, there is a long stone seat, called "mastab'ah," built against the back or side wall, for the porter and other servants. In the court is a well of slightly brackish water, which filters through the soil from the Nile, and on its most shaded sides are commonly two water jars which are daily replenished with water of the Nile brought from the river in skins. The principal apartments look into the court, and their exterior walls (those which are of brick) are plastered and white-washed. There are several doors, which are entered from the court. One of these is called "bab el harum" (the door of the harem); it is the entrance of the stairs which lead to the apartments appropriated exclusively to the women and their master and his children.

ACCORDING to one of the London architectural papers the new spire for the historical cathedral of Bern is nearly completed, after having been in the hands of the architect, Professor Beyer of Ulm, since 1889, and costing the enthusiastic subscribers to the building fund about £14,000 (\$70,000). The committee of the "Münsterbau-Verein," in whose hands all questions of renovation and completion rest, has lately published its annual record of progress on the works, and, according to this report, as soon as the spire is finished the whole of the building is to be thoroughly overhauled and repaired, the proposed extra outlay for these improvements being estimated at £20,000 (about \$100,000). This sum will, however, only cover the cost of such work as must be necessarily done if the building is to be preserved; a complete restoration, with an improvement of the immediate surroundings, requiring another £40,000 (about \$200,000). That a comparatively small town like Bern should voluntarily subscribe so much for the spire and necessary repairs is so creditable to them that they might well spare the doubtful luxury of a restoration.

HARDWARE.

Condition of Trade.

AS the latter part of November usually witnesses a diminution in the volume of trade it is not a matter of surprise that at the present time there is no increase in business. It is, however, a matter of congratulation that there is little, if any, falling off, trade being characterized by a fair activity in view of all the circumstances. There is certainly a better feeling prevalent and more confidence in the early resumption of a normal activity. The policy pursued by merchants of limiting their purchases to early requirements is still adhered to, and with perhaps nearly as much conservatism as during the past few months. Stock orders are given sparingly, but dealers are purchasing frequently with a view to completing their assortments, being content, however, in nearly all cases to carry less goods than usual. Prices are without important change, the market being fairly steady with the exception of some staple goods, such as Nails and Wire, in which there is a perceptible downward tendency. The financial condition continues to improve, and it is pleasant to note that comparatively few failures are reported. There was some apprehension a few months ago that the condition of business and the financial stringency would result in a good many failures in the trade, and perhaps among retail merchants, but fortunately these fears have not been realized, and with the lapse of time there is less to apprehend in this regard.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report business to have improved a little during the past week, owing to the prevalence of cold weather throughout the Northwest, but it is still much under the normal volume. Merchants are fairly well stocked now on seasonable goods, and their orders are only small and evidently to cover sudden calls. Importers of Tin Plates represent their trade interfered with to an increasing extent by domestic Tin Plates, which are not only offered at lower prices, but on which better terms are given than customary in the importation of such goods. The movement is confined to small lots, but there is a fairly

steady trade, in business of that character. Heavy Hardware jobbers are having a better demand in their line, not only in Iron and Steel, but also in winter goods. Material for bob sleds and other seasonable articles has been moving much more freely during the last ten days than at any previous time this fall. Collections are quite fair.

St. Louis.

(By Telegraph.)

There is a steady flow of orders, which while in themselves small in the aggregate made a good business. Country merchants are buying more liberally, and as money is becoming more plentiful daily, credits are not so closely watched as heretofore. Holiday goods are just now selling pretty freely, and notwithstanding the financial stringency prevailing during the past six months a good holiday trade is anticipated by all dealers. Prices do not improve to any extent, except that manufacturers do not appear so anxious to dispose of their product as they were two months since. Barb Wire is firm, while Wire and Cut Nails are weak. Heavy Hardware is moving freely, and in the line of machinists' and railway material an active trade is noted.

Notes on Prices.

Wire Nails.—The downward tendency in the prices of Wire Nails, which has been perceptible for some time, still continues, and on round lots at mill the market is represented by the quotation of \$1.15 to \$1.20. Some of the mills are holding to the latter figure, but there is little difficulty in placing attractive orders at the lower price named. In view of the desire of manufacturers to book orders and the active competition which prevails among them, relatively low prices are made on comparatively small lots, and a good proportion of the business consists of orders from the smaller jobbers and large retailers. The volume of business is only fair, but most of the mills are kept moderately busy. Small lots from store in New York are quoted at \$1.55 to \$1.60.

Chicago, by Telegraph.—Business in Wire Nails is moderately active outside of Chicago, but not so much has been done in the city during the past week. Manufacturers are trying to hold the market at \$1.30 to \$1.32½, Chicago. But these prices have been shaded by some of their competitors, who seem to possess special facilities in low transportation rates. Jobbers quote small lots from stock at \$1.45 to \$1.50.

Cut Nails.—The Cut Nail market shows but little change during the past few weeks, the volume of business remaining moderate and prices pretty evenly maintained on a basis of 95 cents for carload lots at mill. This quotation is not, however, rigidly adhered to and prices have reached a point where some of the mills are not netting over 90 cents. The market in the West seems to be on the whole in a better condition than in the East and prices are more firmly maintained. In view of the unsettled condition of business some of the mills are not in operation, but there is on the whole a larger production of Nails at the present time than for some months. Small lots from store in New York are quoted at \$1.20.

Chicago, by Telegraph.—A continued good movement is reported in Cut Steel Nails, the best trade being, as heretofore, with points in the Southwest, now accessible by very low rates. These rates will run until early in December, and meantime the merchants of that section are stocking up heavily. Very good sales are also being made in the Western section of the country, especially in localities which can be reached by water from Wheeling. Prices on factory lots now run from \$1.15 to \$1.20, Chicago, according to the character of the order. Small lots from stock are selling at \$1.30.

Barb Wire.—The demand for Barb Wire continues only moderate and the market is described as sluggish. Quotations are somewhat irregular and are represented by \$2.15 to \$2.20 for carload lots of Four-Point Galvanized at mill, the former figure being more readily obtainable than a week ago.

Chicago, by Telegraph.—Trade in Barb Wire has not shown any increase since last report, but the demand seems to be fairly steady within the contracted lines that have prevailed for so long. The demoralization in prices reported in other parts of the country has not yet reached this locality, probably because the orders coming up are not large enough to make it an object to cut prices in order to capture trade. The center of disturbance recently seems to have been in the South. Prices on factory lots of ordinary Galvanized Wire continue at about \$2.40; carload lots of Glidden, Waukegan and Baker Perfect are selling at \$2.50. Small lots from stock continue to be quoted at \$2.55, but jobbers are doing but little in consequence of the increasing efforts of manufacturers to take the retail trade.

Market Wire.—The market on Plain Wire is suffering with other lines and lower quotations are developed. The greater part of the business is done at net prices instead of list and discount, and figures are being quoted which are lower than ever before. The decline in the price of the raw material contributes largely to this result, as does also the active competition between producers.

Cordage.—The Cordage market is quiet and the demand light. Prices, in sympathy with lower quotations on Hemp, have recently been tending downward, and are now quotably lower than a few weeks ago. It is reported that pure Manila Rope has been sold recently and is still obtainable at 7½ cents per pound. Sisal also has touched 5½ cents a pound, and in round lots is also obtainable at this price. The market is thus represented by the following prices for large lots, f.o.b. factory or New York, the prices given being subject to a discount of 1½ per cent. for cash:

	Per pound. Cents.
Manila, 7-16 in. diam. and larger.....	7½
“ ¾ in.....	8
“ ½ and 5-16 in.....	8½
“ Tarred Rope.....	7
“ Hay Rope, Medium.....	7½
Sisal, 7-16 in. and larger.....	5½
“ ¾ in.....	5½
“ ½ and 5-16 in.....	6½
“ Hay Rope.....	5½
“ Tarred Rope.....	4¾
“ Medium Lath Yarn.....	5
New Zealand, 7-16 in. and larger.....	5½
“ ¾ in.....	5½
“ ½ and 5-16 in.....	6
“ Hay Rope.....	5½
“ Tarred Rope.....	4¾

Ventilating Sash Lock and Fastener.—Bourke's Improved Ventilating Sash Lock and Fastener, manufactured by the Bourke Mfg. Company, Youngstown, Ohio, and illustrated in *The Iron Age*, November 9, 1893, is sold at from 40 to 45 per cent. discount from the following list:

	Per gross.
Genuine Bronze Metal.....	\$60.00
Malleable Iron, Brass Finish.....	40.00
Malleable Iron, Oxidized.....	40.00
Malleable Iron, Amber Bronze.....	25.00

Glass.—During the past week the Plate Glass Manufacturers' Association having the central selling agency at Pittsburgh was dissolved, and the selling agency was abolished. The association was formed a year ago, with a capital of \$10,000,000, and included the following concerns: The Diamond Company, with works at Ellwood and Kokomo, Ind.; the De Pauw Works, the Pittsburgh Plate Glass Company, having factories at Creighton, Ford City and Tarentum; the Charleroi Plate Glass Works, the Butler Works, and the Howard Company of Duquesne. The official information concerning the dissolution of the association is as follows: "The association was formed for one year, and the time for which it was formed having expired, owing to the financial situation of the country and the light demand for Plate Glass and foreign competition, the manufacturers decided not to continue the association

longer. Therefore, its headquarters in Pittsburgh will be closed on and after this day." It is reported that the Diamond Plate Glass Works, Kokomo, Ind., have resumed operations on half capacity, employing 400 men. Window Glass factories continue to start up, the present capacity being equal to 785 pots, as against 182 pots reported in our issue November 2. The demand is not brisk, and it is reported that card rates have been shaded very materially, especially where money was necessary for factories to meet obligations. At the present time there appear to be no available quotations on any kind of Glass which would hold good under all circumstances.

Export Notes.

Opp & Grundy have formed a partnership for the purpose of representing American manufacturers in the markets of the English colonies of South Africa, Australia (including Tasmania) and New Zealand. They will also have a branch in London, England. They will occupy the premises at 15-25 Whitehall street, recently possessed by R. H. Dana Company, with whom both were connected as individuals for five years. We are informed that they have already taken over a large number of the concerns with which the old concern did business. A. M. Grundy, the junior, was from 1879 to 1888 employed successively by W. H. Crossman & Bro. and Arkell & Douglas. As soon after next January as possible he will go to London, England, for the purpose of establishing their concern there, and then to South Africa and Australia. He has had three years' experience in Australia in this line of trade with the importing houses of those countries.

F. Porter Thayer, who has recently been made export manager for Aultman, Miller & Co., Akron, Ohio, manufacturers of Mowers, Binders and Binding Twine, expects his new duties will keep him abroad almost continuously. He will also represent P. P. Mast & Co., Springfield, Ohio, makers of Grain Drills and Cultivators, and devote himself exclusively to the export trade. He will leave here by the "Teutonic," November 22, for River Plate ports, in South America, via England. From Uruguay and Argentina he will go overland to Chili and return to New York about April 1 by way of Panama. After that his plan now is to go to London, Russia, Roumania and Bulgaria in Europe, and within the year to the colonies in South Africa. His former position in New York will be filled by his son, Charles F. Thayer, who has been made Eastern manager for home trade, with headquarters as heretofore at 18 Warren street, New York.

THE UNION CYCLE MFG. COMPANY have moved their offices from Highlandville, Mass., to 239 Columbus avenue, Boston, Mass.

Improved Methods.

REYNOLDS & CO., New Haven, Conn., are now introducing an improved system of boxing and labeling Set, Cap and Machine Screws of their own manufacture. The principal features of the plan consist in putting all goods in a standard package of 50; in packing them in neat, strong, double boxes covered with light colored manila paper, and in marking them with printed labels on different colored papers, so that the different kinds of Screws may be distinguished by different colors. Thus Iron V-thread Screws are put up with green labels, U. S. thread Screws with

1
50
13

2
- 13 -
14

V THREAD.

Iron Set Screws.

CUPPED POINTS.

REYNOLDS & CO., New Haven, Conn.

Green Label.

3
50
11

8
- 16 -
12

U. S. THREAD.

Iron Cap Screws.

HEXACON HEADS.

REYNOLDS & CO., New Haven, Conn.

Yellow Label.

Reynolds & Co.'s Labels.

yellow labels, &c. The accompanying cuts represent the styles of labels used, which will commend themselves, because of the clearness with which the diameter and length of the Screw is given, and the distinctness with which the kind of Screw is shown. The company issue a largesheet, upon which are shown 16 labels handsomely printed in colors, in the center of which is a labeled box in colors. The colored labels on the sheet show Iron Cap Screws made with V threads in round, square, hexagon, button and flat heads; U. S. thread in the same assortment of heads, also with oval and cupped points, and V-thread Steel Set Screws with oval and cupped points. This will be recognized by the Hardware trade as an improvement over old methods, and as an advantage in lessening labor and avoiding errors in getting out goods.

BARNEY & BERRY, Springfield, Mass., and 114 Chambers street, New York, in their advertisement in this issue relating to their Ice and Roller Skates allude to the award granted them at the World's Fair and the fact that their Skates are for sale by the leading jobbers of Hardware and Sporting Goods.

Benjamin Stiles Brown.

BENJAMIN STILES BROWN, manufacturer and capitalist, Columbus, Ohio, a son of Henry and Harriet Brown, was born in Southbury, New Haven County, Conn., February 22, 1824. He spent his early boyhood on his father's farm and attending the district school. Later on he went to Litchfield, Conn., to finish his scholastic education. In the spring of 1845, when 21 years of age, he started out in life as a cattle speculator, and traversed the States of Ohio, Indiana and Illinois in pursuit of his vocation, and for six years was a successful trader. In December, 1851, he located in Columbus, Ohio, as a permanent resident and commenced the manufacture of Agricultural Implements, and was at the time of his death president of the Brown, Hinman & Huntington Company, who manufacture Farming and Garden Tools, which are shipped to all parts of the American Continent and to Europe.

Mr. Brown was an excellent illustration of the amount and variety of business in which one man may be engaged, and that, too, with success and thoroughness. He was president of the Door, Sash & Lumber Company, the Ohio Furniture Company, the Commercial National Bank; also director of the Columbus Machine Company and the Ohio Pipe Company, all of the city of Columbus. He was also president of the Austin, Tomlinson & Webster Mfg. Company and the Withington & Cooley Mfg. Company of Jackson, Mich. Also president of the Iowa Farming Tool Company of Fort Madison, Iowa, and a director of the Kelley Nail & Iron Company of Ironton, Ohio, the Cleveland, Columbus, Cincinnati & St. Louis Railway Company and the Geneva Tool Company of Geneva, Ohio.

Mr. Brown was married December 19, 1877, to Miss Emma, the daughter of the late distinguished botanist, William Starling Sullivant. In religious faith Mr. Brown was a Presbyterian, and in political faith a Republican. He was a man whose life had been full of business enterprise and activity, crowned with success. To him was due a very large share of the credit for the great progress in manufactures that his adopted city of Columbus has made.

A man of the highest integrity and strictest honor, where best known he was most admired. He was the living

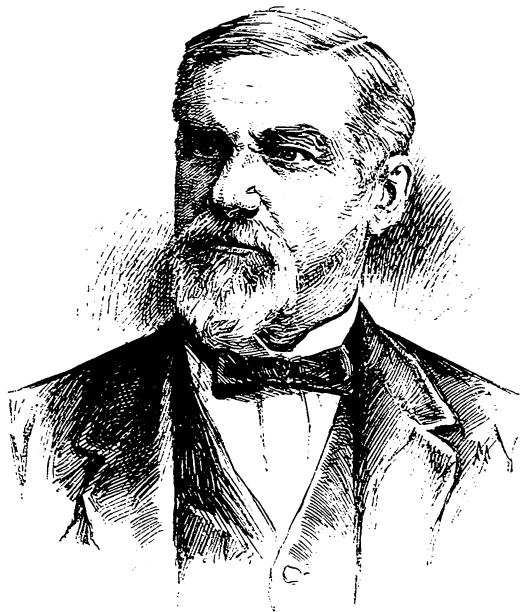
exponent of the sterling virtues of the Pilgrim Fathers, from whom he was a descendant. Calm, cool and collected, quick to discern and decide, he executed his manifold business cares with dispatch and accuracy, and his death will be recognized as that of one of the country's best known and most successful manufacturers.

The Well-Informed Clerk.

WM. H. MAHER.

A FIRM in an enterprising town in New York lately advertised for a clerk to take charge of their grocery department, and among the qualifications necessary was this:

"One who has taste for reading the trade journals with a view to being well informed."



BENJAMIN S. BROWN.

It would seem as if every merchant and every clerk would be only too glad to avail himself of every help in the way of education, and particularly so in the direct line of his business or employment.

One source of information is the trade journal, wherein are gathered items regarding the goods handled in the special branch of trade to which the journal is devoted, discussions upon trade matters, suggestions as to trade points, drawn from the experience of others, and gossip as to the world of business.

It matters not how thoroughly one is posted as to his own trade and locality, there is never an issue of his trade journal that will not contain that which he can read with interest as well as profit. If this is true of the merchant how much more generally it will apply to clerks!

It is the one encouraging feature to the ambitious young poor man of the present that his competitors in the ranks are so superficial, so anxious to shine to-day, and so antagonistic to

hard work. A large number, a large proportion are "graduates" of a school system that teaches a smattering of everything from drawing to Greek, and teaches nothing thoroughly. The "graduate" has a fine sense of his own ability and importance and rests upon this. His place in "society" is of much greater importance to him than his position in the store, and so much of his time is taken up with his social duties he has no hours to spare for reading either trade journals or anything else.

There is usually in the same store a young man who is too insignificant to have a place in "society." His mind is too warped to enjoy the small gossip that occupies the mouths of his more expansive companions, and his business occupies his thoughts during all

his waking hours. He is the one clerk who sees the weekly trade journal; not infrequently he digests its contents better than does his employer. He thinks over the things he reads and assimilates them — makes them his own, and in due course of time is referred to by all around him for this or that bit of information.

As a salesman he is able to explain in an intelligent manner why things are thus and so. Buyers see that he knows his business and they like to trade with him.

When goods are called for that are not kept in stock, or may never have been kept in stock, he knows about them, can show

where they are weak or strong, and can advise with his employer as to whether it would be wise to add them to the stock or not.

His greater knowledge of everything about the goods helps him to remember prices better, and he is hourly consulted by his associates about points in which they are uncertain. Whatever changes are made in the force he is sure of his place until the day comes when he has a store of his own or is given an interest in the firm.

It is not the brilliant fellow that succeeds. When he does he is the exception. It is the plodding man, who is thorough, careful, intelligent.

When I was a salesman on the road and, upon entering a store, saw the trade journal unopened, circulars and price-lists unread, I always knew I might ask good prices with safety. On the contrary, where I saw the trade paper open at the desk I felt my way carefully to discover what prices I might get.

To-day the trade journal has a much more distinctive field than it had 20

years ago; it is less a mere price-list and more an intelligent friend. No merchant can afford to discard its help, and no clerk should miss the opportunity of going to the school that it conducts for his benefit. But this article is not written to increase the circulation of trade journals; it is to emphasize the benefit of being a well informed clerk. Trade journals are one medium through which he can inform himself, and they ought to induce him to try further fields of reading.

One of the best salesmen that I ever met was one who always carried an educational book in his gripsack; when he had to wait for a delayed train or had an hour to spare at the hotel he had his book in his hand.

I found him a pleasant companion and so did his customers. He was respected and liked by all who knew him, and deserved the success that came to him later. He was a well-informed man; interested in everything worth a man's thought, with no time to waste over billiards or barrooms or worse things.

One of the high salaried men that called on me from New York had the faculty of picking up the latest story and repeating it to perfection. He was equal to many men on the stage. But if I asked for specific information about an article in his line he could not give it; he had the sample and there was the price; he could tell a good story and was free in paying for refreshments, if you would have them, but beyond this he had nothing.

I was not surprised when his employer told me that he would be allowed to resign at the end of the year. Said he: "He sells less each trip. Everybody likes him and speaks well of him, but each time they see him they buy less of him."

I thought I understood the reason. Stories are good in their way; cigars and wine influence some, but, after all, men think, "business is business," and they want to buy of a man who understand his goods from A to Z.

It is for this reason that merchants are looking around either for well-informed clerks, or for those of such frame of mind that they will inform themselves as they grow in business. If the desire is there the rest will follow.

Twenty-five years ago a young man worked in a stove store next door to me. He worked hard, too, for he had to run stoves out and in, black stoves, set them up, and do anything and everything needed to be done. Shops in those days kept open till 8 o'clock every evening, and were opened early in the morning. But this young man found time to study up everything connected with stoves and tin. By and by, with a very few hundred dollars and some credit, he opened a shop to make tin cans, and to-day he is at the head of the largest factory of this kind in all the world.

He read and studied "with a view to being well informed," just as the

New York advertisement wants a young man to do, and his information became valuable capital.

The young man of to-day should take courage and press on in the same direction. Well-informed men are needed, always will be needed, and will always get to the top.—*Trade.*

Trade Items.

THE J. E. FORSEE COMPANY, Room 203, 411 Olive street, St. Louis, Mo., have established themselves as manufacturers' agents, having already secured a good line of accounts. Among them are the Pullman Sash Balance Company, the Rockford Bit Company, the Maryland Tack Company, the Chillicothe Mfg. Company and the U. S. Crayon Company. J. E. Forsee was the buyer for the Wyeth Hardware & Mfg. Company of St. Joseph, Mo., and has a wide acquaintance among the Hardwaremen of the entire country.

HENRY DISSTON & SONS, Philadelphia, in their advertising space are calling attention to their Improved Saw Clamp and Filing Guide, an article especially designed to assist those not skilled in the art of saw filing to file a saw correctly.

PADDOCK & KLEINE, 107 Chambers street, New York, are presenting a handsome and useful desk accessory in which a Calendar and Clock are combined. A leather covered frame $5\frac{1}{4}$ x 8 inches in size, $\frac{1}{4}$ inch thick, is supported in an inclined position by a rest at the back. In the upper left hand corner is a clock with a 2-inch face. An opening $3\frac{1}{2}$ x 4 inches takes up a large portion of the remaining room on the face of the frame, and is supplied with monthly calendars, which slide in from the end of the frame. Above the opening is the name and address of the concern, and below are the words: "Wagon and Carriage Wood Work, Hardware and Trimmings for Export," and appropriate illustrations of Wheels. The gilt lettering on the leather, the date cards printed in red and black, the neat appearance of the whole affair, together with the friendly ticking of the little timepiece, are at once pleasing to the recipient. Though intended for 1894, they have been prepared thus early to avoid the annual flood of calendars.

T. H. SPEDDY, Worcester Block, Portland, Ore, has recently been East visiting the parties for whom he is representative, among others. Mr. Speddy is the manager of the Pacific Coast business of a number of Eastern manufacturers, and his line includes general Hardware, Carriage and Saddlery goods.

ANNOUNCEMENT is made by Robley & Brundage, 142 Chambers street, New York that their partnership was dissolved on November 13, by mutual consent. Partnership debts and obligations have been assumed by James H. Rooley, who will continue the business at the former address.

BOAS BROS., 233-235 Greenwich street, have ceased to sell their Adamant Enameled Ware on joint agreement with Lalance & Grosjean Mfg. Company and St. Louis Stamping Company. This line of goods is of German manufacture.

IN RECOGNITION of a prosperous year's business, Carter & Huckins, Hardware merchants, Oberlin, Ohio, tendered a banquet to their employees and a few invited friends on the evening of the 8th inst. Nineteen persons, fourteen of whom are in the firm's employ, sat down to an excellent supper. After the supper D. C. Foote, the

head clerk of the firm, in a neat speech tendered the thanks of those present to Messrs. Carter and Huckins for the bountiful repast, and testified to the high esteem in which these gentlemen are held by their employees. Mr. Huckins and Mr. Carter responded in complimentary terms, in the course of which reference was made to the confidence which the firm had ever reposed in their employees. The evening's proceedings, which had been of an exceedingly happy character, were brought to a close by a few appropriate remarks from the Mayor of Oberlin.

THE ADVERTISEMENT of J. Frank Greene & Co., 276 Water street, New York, in this issue, requests the trade to write for estimates on Leather Parts, such as Straps, Washers, &c., which they are furnishing. They advise us that by economy in cutting by reason of making a great variety of shapes and by the use of improved appliances they are able to furnish any shape or article in leather cheaper than a manufacturer can make it himself.

THE READING HARDWARE COMPANY, who for some time have been seeking more commodious quarters than those now occupied by them at 79 Reade street, have leased the premises 96-98 Reade street, in this city, for a term of years, and expect to occupy them on or about February 1 next. They have secured the street floor, basement and sub-basement, and will fit up the place in modern style, thus securing excellent facilities for handling business, showing goods and samples, &c.

IT WILL BE OBSERVED that the Putnam Nail Company, in their advertisement in this issue relating to their Horse Nails, refer especially to the award of the World's Columbian Exposition, giving the wording of the diploma granted them.

CHARLES C. STELLE of 81 Fifth avenue, Brooklyn, N. Y., has lately succeeded to the old established Sap Spout business of C. C. Post of Burlington, Vt., and has removed the business to the above address in Brooklyn. The Spouts are well and favorably known to the trade, a feature in their construction being the patent air trap for excluding the air, and, as a result, preventing the sap from freezing and drying up. By conducting the business in Brooklyn goods can be shipped more quickly and at less expense than formerly. It is Mr. Stelle's intention to maintain the high standard which these goods have obtained, and to merit the confidence of the trade, both old and new. The Sap Spouts are particularly referred to in his advertisement in this issue.

JAMES MANN & SONS, Buffalo, N. Y., as per their announcement on another page, are offering Heavy Strap Hinges, 6, 8 and 10 inch, at a discount of 50 and 10 and 10 and 10 and 10 per cent.

THE BONNETTE ARC LAWN SPRINKLER COMPANY, Bay City, Mich., have appointed John H. Graham & Co., 113 Chambers street, New York, as their general agents for the sale of their Arc and Hustler Lawn Sprinklers.

Mexican Tariff.

THE Bureau of American Republics has received information of certain modifications in the existing customs tariff of Mexico which are of interest to importers. The Government has issued a law requiring importers on and after January 1, 1894, to pay, by way of municipal duty, $1\frac{1}{4}$ per cent. on and in addition to the regular import duties. This is equivalent to an augmentation of the present duties by $1\frac{1}{4}$ per cent.

Arrangement of Stores.

S. H. BERRY HARDWARE COMPANY.

THE S. H. BERRY HARDWARE COMPANY, Dover, N. J., who started business in a small way about 18 years ago, have recently erected a handsome building, and arranged it for the needs of their increasing trade. The building, interior views of which are shown in the accompanying cuts, is 35 x 67 feet in size, of Amboy buff brick with red sandstone trimmings, the water shed being of Morris County granite. The height of the four stories is as follows: First, 12½ feet; second, 11 feet; third, 10 feet; fourth 9 feet. The first, second and third stories are used for the business. As shown by the ground plan, Fig. 801, the first floor is divided into two rooms, the corner one, 20 x 65 feet, being used by the firm. All the rooms above the first floor are the full width of the building. A counter runs along in front of the shelving on the right of the entrance to the window near the elevator. A Morse freight elevator runs from the basement to the fourth floor, and can be worked by either water motor or electricity. Doors open from the elevator shaft on the first floor to the sidewalk, and as the ground slopes back from the front of the building a wagon can back up and load or unload goods from or into the elevator. The elevator openings at

vator shaft. The entire building is heated by steam and lighted by electricity, and the office is connected with each floor by speaking tubes. Each floor is supplied with city water. The

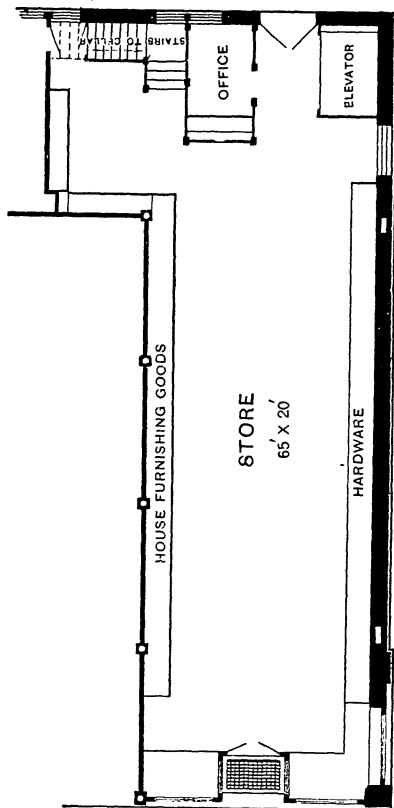


Fig. 801.—First Floor Plan, S. H. Berry Hardware Co.

SHOW WINDOWS AND SHELVING. At the right of the entrance is the show window, as appears in Fig. 802,

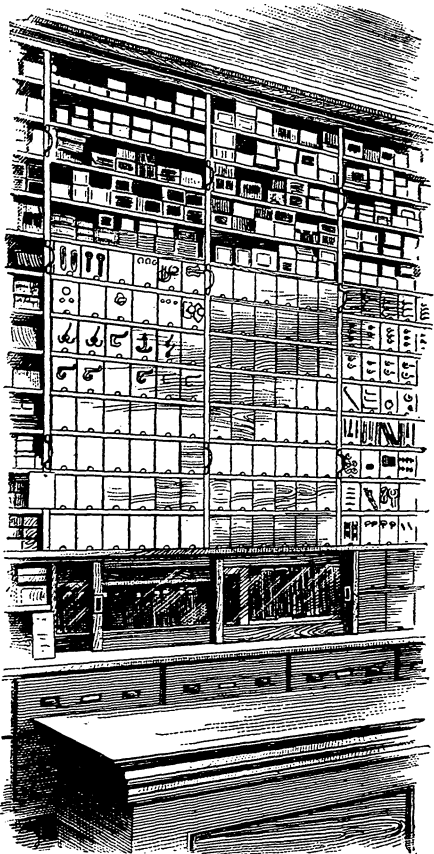


Fig. 803.—Counter and Shelving.



Fig. 804.—Wall Case and Hand Saws.

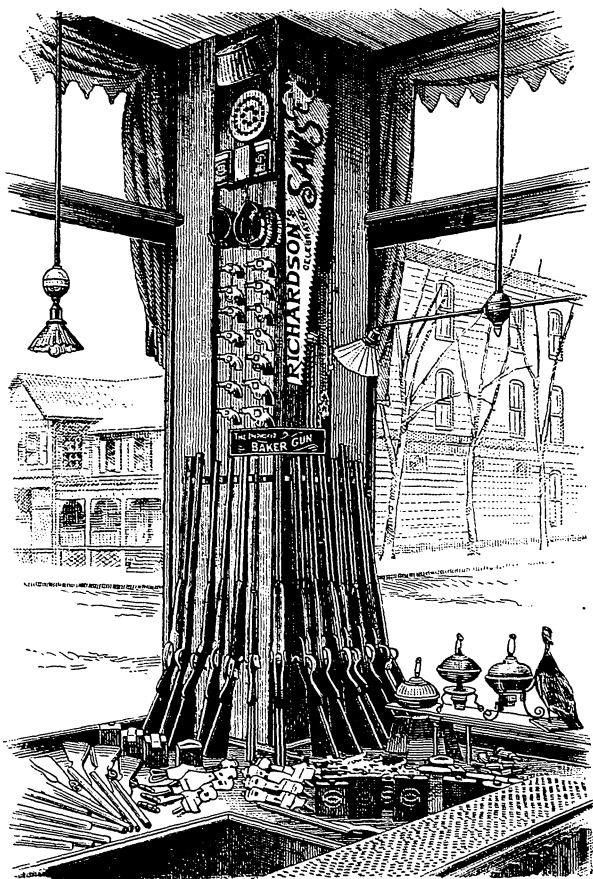


Fig. 802.—Show Window.

each floor are provided with automatic scuttles or doors for safety; also to prevent fire from rushing up the ele-

cost of the structure, not including the ground, was from \$10,000 to \$12,000.

the view being from the inside of the store. The window being on the corner gives ample room for an elaborate

display of goods. The show window on the opposite side of the entrance is devoted to House Furnishing Goods, and a tier of shelves on the wall for the display of Tea and Coffee Pots, and similar goods. The fixtures on this floor are of ash, finished in natural wood. Along the right hand side of the room are shelving and counters, a portion of which are shown in Fig. 803. The shelves run to the ceiling, the lower portion being built in the form of steps, as shown in Fig. 804, with brass handles on the partitions to assist in reaching the boxes and the goods above. There are 400 wood boxes or drawers in the shelving, made interchangeable in size, the boxes measuring 4, 5 and 7 inches across their fronts. The boxes are provided with Franklin Brass Company's No. 254 pulls, the goods being sampled above. The company first intended lettering

accommodated on shelves open at the end. It is found, however, that the limited space provided for these goods is not sufficient for their stock, otherwise it is a very satisfactory arrangement. The wall case above, with sash to raise, is devoted to Planes on shelves and to a display of Saws of various kinds, hung on pegs above.

THE OFFICE.

The office in the rear is commodious and is inclosed with paneled wood work and glass. A standing desk for bookkeeper faces the storeroom, the rest of the space being devoted to a roll top desk and a safe. It is the intention to elevate the entire office about 3 feet, so as to bring it on a level

Varnish, Carriage Paint, Nail bins, drawers, &c., occupy the shelving behind the counter.

HOUSE FURNISHING GOODS.

In front of the shelving devoted to House Furnishing Goods on this side of the store, and near the corner just described, are Dayton cases on square bases, standing on the floor, holding the retail stock of Tire and Carriage Bolts, Wood Screws, flat and round-head Brass Screws, Morse Drills, &c. Some of these cases were made to order, of special size to accommodate the line of goods carried.

The shelving for House Furnishing Goods, which extends along this side of the store, is shown in Fig. 806, there be-

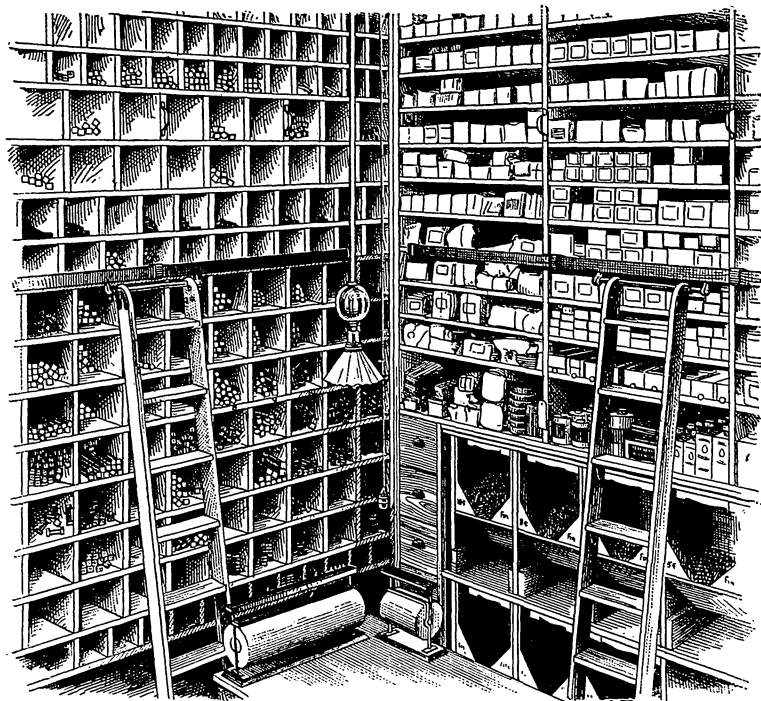


Fig. 805.—An Interesting Corner.



Fig. 806.—House Furnishings and Cupboards.

the drawers instead of sampling them, but found samples much more simple and more productive of business. Customers can see such goods as they want, and can be served much more expeditiously, especially when there is a rush of customers, or when short handed. Stacy bins, of which there are 38, are used for Nails, and open to the back side of the counters. Table Cutlery is kept in the shelving case, behind sliding glass doors, provided with flush brass pulls, as shown in Fig. 803. The case is high enough to allow standing the original boxes on end, upon which the Knives and Forks are sampled.

An ingenious arrangement is shown in Fig. 804 for keeping the stock of Hand Saws in the original boxes, this being in the end of the shelving near the elevator. False fronts are substituted for the last tier of drawers under the ledge, and the Saw boxes are

with the platform of the stairs. This arrangement will give a better view of the store and will also provide room underneath the office for Handles and goods of unusual length. A small brass rod hung horizontally in screw eyes at each end provides a place for hanging Chains; the rod is placed on the stairway at the foot of the stairs.

LAG SCREWS, WASHERS, ETC.

The shelving represented in Fig. 805 is located in the corner of the L at the left hand side of the store. The counter in front is supplied with Stacy Nail bins, and the traveling ladders were furnished by the Coburn Trolley Track Mfg. Company. The bins at the end of the counter are devoted to Lag Screws, Machine Bolts, Washers, Strap and T Hinges, &c. The bins extend to the floor, though not so shown in the cut. Full packages of Tire and Carriage Bolts, Glue, cans of Carriage

ing no counters on this side. Under the ledge the goods on the shelves are protected by doors sliding on two tracks. The two wall cases extend nearly to the show window, and are provided with glass sash to raise. In these cases are kept Carvers, Brass Tea Kettles, Spoons, Scissors, Tea and Coffee Pots and other high grade goods.

In the shelving to the right of the wall cases, the shelf immediately above the ledge is narrower than the shelves above, thus giving a better view and more easy access to Long Handle Spoons, Dippers, Ladles and the kitchen utensils belonging to the line lying on the ledge. The shelving is without partitions, being supported by light turned standards at the front.

The wall space between the wall cases and the show window is used for sampling goods. In front of this, leaving sufficient room for a passageway to the show window, is the buyer's

desk. This has a roll top and is conveniently situated near the door, so that the buyer can welcome customers and see that they are properly waited upon.

SECOND FLOOR.

The treads of the steps going to the second story have strips of stair rubber; the paneled door above and the stairway are finished to correspond with the other wood work in the room below. On the second floor racks are provided for Spokes, Shafts, Oars and Glass. Wheels, Boys' Express Wagons, Sleds, Shovels, Enameled Duck and Carriage Trimmings are also kept here. Along one side of the wall is shelving for surplus stock of shelf goods. A Weather Strip rack, arranged similar to a rack for Bar Iron, is on this floor. The rack is 8 feet long by about 3 feet wide and 5 feet high, and is mounted on casters so as to be moved about. The wooden Weather Strip is put in and taken from the various apartments from the ends.

THIRD FLOOR.

On the third floor are kept Rims, Wheelbarrows, Carriage Bodies, Corn Shellers, Cutting Boxes, Cider Mills and other goods of this character.

BASEMENT.

In the basement are assembled all blacksmiths' goods. A rack, with 245 compartments, is devoted to Bar Iron and Steel. Forty-one bins are provided for Horseshoes, the stock carried including steel, snow, toe weight, side weight, light, medium and Mule Shoes. Tuyere Irons, Anvils, Sledges and other goods found here make it possible to accommodate a blacksmith with almost anything in his line. Hubs are kept on swinging shelves in a cool and dark part of the basement; Rope is also kept here as the most appropriate place. Near the front of the basement, convenient to the coal, is a Dunning steam heater, which supplies the entire building with warmth. Stone steps leading down from the sidewalk provide a way for entering or leaving the basement without going through the store, and a chute is used for sliding down kegs of Nails, Horseshoes, &c. A number of sheets of No. 12 Iron fastened to the floor at the end of the chute prevent heavy goods breaking up the floor as they descend.

The store is well lighted, and taken as a whole is very thoroughly provided with conveniences and labor saving devices.

Price-Lists, Circulars, &c.

PITTSBURGH BRASS COMPANY, Pittsburgh, Pa., and 36 Park place, New York: illustrated catalogue and price-list of Piano, Banquet, Vase, Table and Bracket Lamps. The book is divided into several sections, each class of goods by itself, to facilitate choosing what is wanted. There are a number of metal and onyx Tables, both with Lamps and without. Also an assortment of Shades and Shade Holders for Piano and Banquet Lamps, together with decorated Glass Shades for Table and Hand Lamps.

GRAND RAPIDS HAND SCREW COMPANY, Grand Rapids, Mich.: Factory

Furnishings. An 1893-94 catalogue illustrates, with descriptions and prices, patent Hand Screws, Case and Glue Clamps, Cabinet Makers' Benches, Carvers' Benches, Factory Trucks, Saw Tables, &c.

THE BOURKE MFG. COMPANY, Youngstown, Ohio: Ventilating Sash Lock and Fastener, Diagonal Sash Lock and Fastener, Nonpareil Window Cleaner, Extension Handle Socket, Excelsior Bar Cleaner and Floor Scrubber and Dryer. A catalogue illustrates these goods, with descriptions and list prices.

JOHN ROBBINS MFG. COMPANY, 58 Kneeland street, Boston, Mass.: Badges, Medals, Plates and Checks. A catalogue gives 40 pages of illustrations of Badges and Medals, including aid and athletic Badges; Badges for army corps, bicycle and boys' clubs, for policemen, constables, detectives, firemen; fire alarm box Tags, sporting Medals, &c. These goods are made in solid gold, silver or nickel, and special designs are furnished when desired.

B. STAUBACH, 236 Greenwich street, New York: Butchers' and Packers' Machinery, Tools and Fixtures, Engines, Presses and general supplies; Meat Cutters in great variety, Meat Mixers, Stuffers, Knives, Saws, Scales and Balances, Blocks, Counters, Racks, Trucks and Cleavers, together with a large assortment of miscellaneous goods used by dealers in food products. A feature of the book is a number of lists on many of the goods so arranged, both by the dozen and single article, as to be available as a selling price as between the retailer and his customer. This permits of the book being shown with cuts and descriptive matter where goods are not in stock.

AMERICAN NET & TWINE COMPANY, 34 Commercial street, Boston, Mass., and 199 Fulton street, New York: Cotton and linen Fish Nettings and Twines. Their large sized catalogue of 60 pages illustrates the process of Net manufacture, and shows the use to which different kinds of Nets are put. Among these are Menhaden Purse Seines, Snell Traps, Weirs, Salmon Traps, Salmon Gill Nets, Inland Seines, Minnow Seines, Trammel Nets, Fyke Nets, Cast Nets, &c. Something like 100 different kinds of articles are included in the catalogue, of which prices of the various styles and sizes are given.

THE UNION HARDWARE COMPANY, Torrington, Conn., and 95 Chambers street, New York: Ice Skates. An illustrated price-list shows their Lock Lever Skate in various finishes, Lock Lever Union Extension Skates, Ladies' Lock Lever Skate, Ladies' Lock Lever Union Extension Skate, Ladies' Wood Top Skates, Donoghue Racing Skate, Union Skate Sharpener, &c.

THE BUCKLIN CAN FILLING COMPANY, 233 East Hamburg street, Baltimore, Md.: Automatic Can Filler. The machine is intended for filling cans with tomatoes, and has a stated capacity of 4000 cans per hour. It is explained that the filling is done with little or no waste, and that the machine fills, tops and wipes the cans. The company, formerly of Keyport, N. J., have secured works in Baltimore, where all correspondence should be addressed.

PENNSYLVANIA BOLT & NUT COMPANY, Lebanon, Pa.: 1894 catalogue relating to hot and cold punched square and hexagon Nuts, Machine, Carriage and Track Bolts, gimlet pointed Coach Screws and Lag Screws, bolt ends and Turn Buckles, solid die Boiler and Bridge Rivets, wrought and cast Washers, Rods for bridges and buildings, Arch Bars, Body Bolsters and Car Forgings, refined Bar

Iron. The catalogue, which is handsomely printed and well arranged, gives illustrations, descriptions and list prices of this line of goods. Many of the price-lists are accompanied by tables of weights, special sizes, number to the pound and other valuable information arranged in a convenient and comprehensive manner. An extensive telegraph code is given near the back of the book, preceded by a telegraph code index. The work will prove a valuable one for those interested in this line of goods.

J. W. FISKE, 39 and 41 Park place, New York: Ornamental Iron, Brass, Bronze and Zinc work. An illustrated catalogue supplements a former edition calling attention to an extensive line of artistic Wrought Iron, Brass and Bronze work for use in public buildings, parks, institutions, private residences, stores, stables, &c. It is particularly designed for architects, contractors, builders and those having to do with choosing materials of this character. The assortment is a very complete one and ranges from goods of moderate cost to those of elaborate and expensive designs. Among the leading articles may be mentioned Grilles, Transoms, basement and cellar Window Guards, Gates for a multitude of purposes, Newel Posts, with and without Lamps, Vestibule Door Grilles, Sheet Iron Doors, &c. The house is also continually executing orders for work made according to special designs. In the catalogue each plate has a separate number to avoid confusion in identifying any particular article. There has lately been issued an illustrated supplement and price-list of Copper Weather Vanes, Bannerets, &c., which contains designs not heretofore shown. Among these is one designated as Nancy Hanks, with pneumatic tire sulky, a Hackney stallion, made specially for the Dacotah Flats, Horse over Hurdle, Steam Fire Engine, Locomotive and Tender, &c. Attention is called to the fact that all these goods are made of copper and gilded with pure gold leaf.

It Is Reported—

That the Hardware store of H. Watson, Jonesboro, Ark., was entered by burglars recently and three double barreled breech loading Shot Guns carried off.

That on the 7th inst. fire broke out in the Hardware store of William Hutton, Granger, Texas, and entirely consumed the stock and building. The stock was valued at \$1600, with insurance for \$1000. Loss on building, \$500; no insurance. The origin of the fire is unknown.

That almost the entire business part of the town of Latham in Butler County, Kan., was destroyed by fire on the morning of the 6th inst. Among the heaviest losers by the fire were the Winfield Hardware Company.

That Mason & Dale's Hardware store was considerably damaged by smoke and water in a fire at Bowmanville, Man., on the 6th inst.

That E. N. Falke has opened a new Hardware store at 811 Monroe street, Toledo, Ohio.

That burglars broke into C. M. Jones' Hardware store, at Ripley, N. Y., on the 8th inst., and carried off Revolvers, Knives and Razors to the amount of \$150.

That in a fire at Memphis, Tenn., on the 13th inst., the stock of the Schmalzried Hardware Company suffered to the extent of \$85,000. The insurance is \$28,000.

That in a fire in the Phoenix Block, Concord, N. H., on the 11th inst., the

stock of Hardware of Thompson & Hoague was damaged, mainly by water, to the extent of \$15,000. The firm have opened a retail store in their wholesale establishment on Depot square, and will conduct the business there for the present.

That Arnold & Whitmore have entered the Hardware and Implement business at Ludlow, Ill.

That the store of C. Schnepff, Elkport, Iowa, was recently damaged by fire.

That G. W. Weston is closing out his Hardware business at North Branch, Mich.

That F. D. Woodworth, dealer in Hardware, Stoves, &c., Onondaga, Mich., has sold out to J. H. Strong.

That the Rockford Hardware Company, Rockford, Mich., have dissolved.

That R. Edmunds & Son, Warren, Pa., are out of business. They have been succeeded by T. O. Slater.

That the firm of Heacock & Durfee, Gloversville, N. Y., dealers in Hardware, have dissolved. Mr. Heacock will continue the business alone.

That Hamilton Welton is intending to enter the Hardware and Implement business at Paragon, Ind.

That Edward Thomas has purchased a half interest in the Hardware store of Herbert A. Wolcott, Carthage, Mo., and hereafter the firm name will be H. A. Wolcott & Co.

That A. A. Suppigar, of the firm of Kreige & Suppigar, Hardware dealers, Edwardsville, Mo., has sold his interest in the firm to J. C. McKittrick.

That C. W. McMahon has sold his interest in the Hardware business at Center Junction, Iowa, to his partner, Herbert Mackrill.

That H. Stonebrook and Theodore Thome have opened a Hardware store at Nashville, Ohio.

That the firm of Hancock & Boyes, Hardware merchants, Emerado, N. D., have dissolved.

Death of C. A. S. Fraser.

THE TRADE will learn with sincere regret of the death of C. A. S. Fraser at Los Angeles, Cal., November 9, of consumption, aged about 41 years. Of a genial and companionable nature he readily made friends. Starting in business with Pugsley & Chapman he went with the Hart, Bliven & Mead Mfg. Co. in 1870. Rising through all the departments, he became successively city and stock buyer and then represented the company on the road. In 1878 he connected himself with Woodburn Sarven Wheel Company, Cincinnati, Ohio, and afterward with Hibbard, Spencer, Bartlett & Co. and the National Saw Company. He is referred to in very kindly terms, indicating the regard in which he was held. Permanent interment will be made in Greenwood Cemetery, in the family plot.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In this line there is something of the unpleasant experience that has been common in most branches of business since the early part of the autumn season. Pressure of circumstances has forced competition in various departments and practically wrecked

price-lists. The combined corrodors, for example, have to contend with a growing antagonism from outsiders and more than ordinary effort on the part of manufacturers of cheaper pigments to push the sale of their goods. Along with this is more or less irregularity in prices of American Oxide Zinc and a revised official list showing about $\frac{1}{4}\phi$ reduction from the old one. Then some other base materials are being urged with a persistency indicative of inclination on the part of producers and importers to cut their stocks down as low as possible before the end of the year. Hence a generally weakish undercurrent and hardly anything more than routine trade except such transactions as may be facilitated by the force of exceedingly low prices.

White Lead.—Reports as to aggressive spirit on the part of "outside" corrodors and manufacturers of quick process Lead continue and enough facts come out to show that those reports are not without foundation. In fact, the appearances are that the minority interest is gradually becoming more influential and that the combined corrodors may find it expedient to issue a new list or acknowledge that the one in existence is purely "nominal." As matters stand, some of the outside producers are offering dry White Lead at 5ϕ less a commission, or more than $\frac{1}{4}\phi$ below the minimum rate quoted by the combine. Similar irregularities exist in quotations for Lead in Oil where large quantities may be involved, while jobbers still adapt prices to circumstances with the small trade. To all appearances the market is more ragged now than it has been at any time since the leading corrodors consolidated. Business is slow and the demand strictly commonplace.

Zincs.—The announcement is made of a reduction of $\frac{1}{2}\phi$ in manufacturers' prices of American Oxide, bringing the range down to $3\frac{3}{4}\phi$ @ $4\frac{1}{2}\phi$, according to quality and quantity, with the usual rebates to large buyers. Care has been taken to give the impression that manufacturers are working harmoniously and that there is no really aggressive competition, but facts indicate that the productive capacity is not only excessive but large enough to strain old combinations of manufacturers. In other words, it looks very much like a free and open market, with more than a bare chance that purchases on strict cash terms could be made at some concession from the prices generally quoted. Foreign brands are also selling at irregular prices, although no change in regular lists have been announced thus far.

Red Lead and Litharge.—The movement in Red Lead has been slow and seemingly low prices on foreign stock, to arrive, seem to possess little or no attraction at the present time. The old list for American brands is still quoted, but few if any sales are making at those figures. Litharge has met with rather slow sale, the large consumers being careful in their purchases, while the jobbing trade has bought in a hand to mouth way only. Prices are rather weak, but show no radical change.

Orange Mineral.—Foreign brands are not urged for sale in any remarkable degree, but there is enough effort to keep prices somewhat unsettled and slightly in buyers' favor. The volume of business is moderate, and the demand seems to be slower, if anything, than usual at this season of the year.

Colors, &c.—There is not the least new feature in the market for Dry or Oil Colors. For all staple lines not under control of combinations prices are extremely variable, and some that are supposed to be thus controlled are let out occasionally at cut prices.

Meanwhile sales are slow and chiefly of hand to mouth character. Oil Colors, drawing the line at a few specialties, are in about the same position. With ready mixed Paints it is the old story of as many prices as there are varieties.

Miscellaneous.—Block Chalk has undergone no change in price, and the market remains in a languid condition. Whiting finds slower sale, but the business passing is chiefly at former prices. Barytes and the general line of Clays realize about former prices, but sell rather slowly.

Oils and Turpentine.

There have been no really new developments in the market for Animal and Vegetable Oils, drawing the line at Linseed Oil, which is momentarily affected by a sharp rise in the cost of raw material. Lard and Cotton Seed Oils have continued to depreciate in value, chiefly because of indifferent buying. Other goods have just about held their own in price and met with fair sale in routine way. Speculation seems to be at a standstill, export interest is tame and home trade buying is of strictly perfunctory character.

Linseed Oil.—A quite sharp rise in cost of raw material has caused some modification of selling pressure by out of town crushers and at this writing it seemed doubtful that either State or Western brands could be secured at less than 38ϕ . In fact, bids of 38ϕ for deliveries during the first quarter of 1894 were said to have been turned down. City crushers have thus had better opportunity to push their product, but the outlet was narrow, as usual at this season of the year, and only routine sales have been effected. City Oil, made from American seed, brings 40ϕ for raw.

Cotton Seed Oils.—Under the influence of lower prices for Lard and inferior Greases the market for Cotton Oils has ruled rather weak. The lower level of prices has failed to stimulate either export or home trade purchases, and the market is therefore not only weak, but rather dull. Prime crude has been sold at from 36ϕ down to 30ϕ ; Summer Yellow at from 41ϕ down to 38ϕ , and other varieties at corresponding prices.

Lard Oil.—Pressers in this city and vicinity are gauging their product as closely as possible to current sales. The latter, however, have been quite below calculations, and there is enough surplus to have a weakening influence upon prices. Prime city went at 75ϕ @ 76ϕ in wholesale quantities, and the lower grades are offered at corresponding prices. The movement has been slow, and the demand at present is tame.

Fish Oils.—There has been no movement in the crude Menhaden, Sperm or Whale Oils and sellers' figures stand just about as they were a week ago. The manufactured products have met with merely jobbing sale, chiefly at former prices. Cod Oils steady in price, but quiet.

Miscellaneous.—Common Olive Oil in barrels has met with somewhat freer sale. Spot parcels brought 60ϕ upward and future shipments still command about 55ϕ . There is no speculative movement at present. Coconut Oils are a shade firmer, since late low prices have led to cleaning up of weak holdings. Prices, however, show no radical change. Red Oils and Neatsfoot Oil sell in moderate quantity only, but realize former prices.

Spirits Turpentine.—Prices have remained almost stationary during the week. The range was 30ϕ @ $30\frac{1}{4}\phi$ for regular and $30\frac{1}{4}\phi$ @ $30\frac{1}{2}\phi$ for machine barrels. Business has been fair in volume, but of strictly routine character.

Lane's Sliding Door Latch.

The sliding door latch herewith shown is put on the market by Lane Brothers, Poughkeepsie, N. Y., for whom John H. Graham & Co., 113 Chambers street, New York, are agents. All exposed parts of the latch are made of steel, and one pattern is designed for all doors, there being no rights and lefts. The latch is constructed to operate equally

The Marvelous Duplex Serving Fork.

The duplex serving fork shown herewith is introduced by the Duplex Fork Company, Fremont, Ohio. The fork is described as being made of the finest steel, triple plated, and, it is stated, will wear for years if properly taken care of. The fork, it is stated, is al-

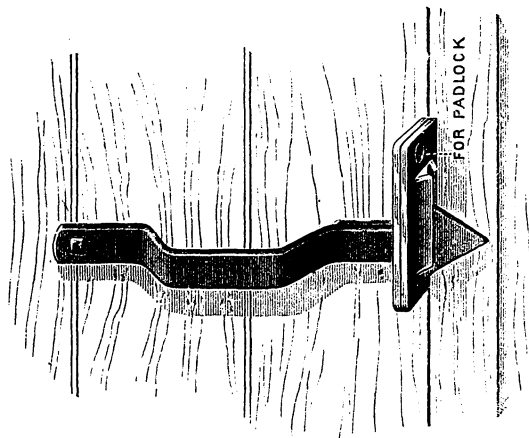


Fig. 1.—Showing Holes for Padlock.

well when placed on either end or either side of the door, also whether the door be made to slide outside or inside the building. The door pull is set in flush on the partition side as in Fig. 1, and is also utilized for raising the latch, no other device being required. While this article is designed chiefly as

ways open and ready for use, and the slightest pressure can be felt. The fork is designed for serving salads, vegetables, meat, &c. As a carving fork it holds the meat without puncturing or tearing it. Similar forks are made for kitchen use, designed for taking meats, vegetables or anything hot

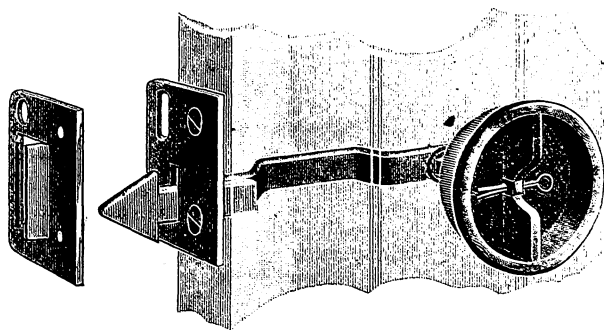
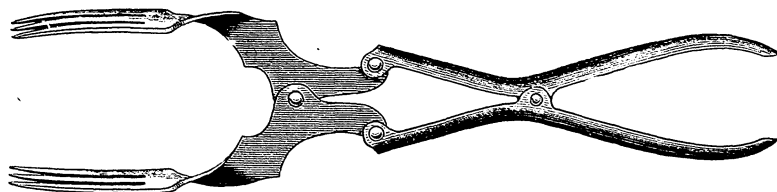


Fig. 2.—Lane's Sliding Door Latch.

a latch, yet it can be conveniently locked with any ordinary padlock, and when so locked, it is stated, there are no exposed bolts or screws that can be removed from the outside. The point is made that consequently the door cannot be opened except by destruction of

from the oven. Sugar or pickle tongs are made on the same principle for table use, in serving sugar, or pickles from jars or cans. This tongs is carved and plated. These goods are sold in sets consisting of kitchen fork, serving and carving fork, as illustrated, and pickle



The Marvelous Duplex Serving Fork.

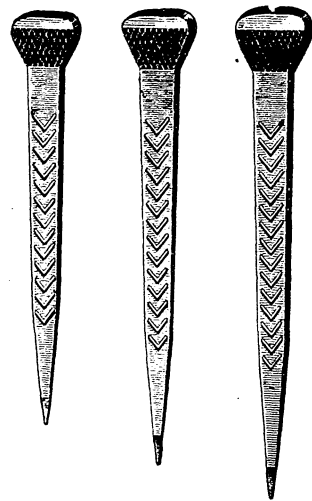
the wood work. The latch is designed for use on sliding doors of carriage houses, stables, warehouses, barns, &c., as the general introduction of improved anti-friction door hangers has created a demand for a latch adapted to the purpose.

tongs, or any of the three can be purchased separately.

European governments are co-operating in vigorous efforts to suppress the anarchism which has been rampant of late, particularly in Spain and France.

Capewell Corrugated Horse Nails.

The accompanying cuts represent corrugated horse nails offered by the Capewell Horse Nail Company, Hartford, Conn. The nails have straight ridges on the surface, which are referred to as



Capewell Corrugated Horse Nails.

not obstructing their passage through the hoof, and are designed to give a secure hold without the necessity of clinching. It is pointed out that a hoof presents a better appearance when the nails are not clinched, and that the operation of clinching is frequently painful and attended with difficulty and danger on colts and restive animals. The manufacturers state that the corrugated nails have been found by practical test to hold a shoe as securely and as long as a clinched nail. These nails are made in all sizes.

Toledo Wheelbarrow Wheel.

The improved wheelbarrow wheel herewith illustrated is offered by G. W. Thomas & Co., proprietors of the

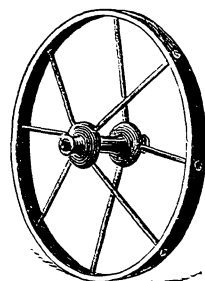


Fig. 1.—Toledo Wheelbarrow Wheel.

Toledo Wheelbarrow Works, Toledo, Ohio. A $\frac{3}{4}$ -inch round spoke is used,

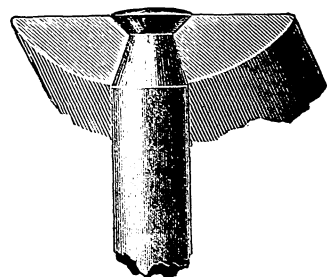


Fig. 2.—Shape of Spoke in Tire.

which is cast in the hub, as in Fig. 1. The spoke passes through the tire in a wedge shape, as shown in the sectional cut, Fig. 2. It is claimed that by this arrangement twice the strength of the

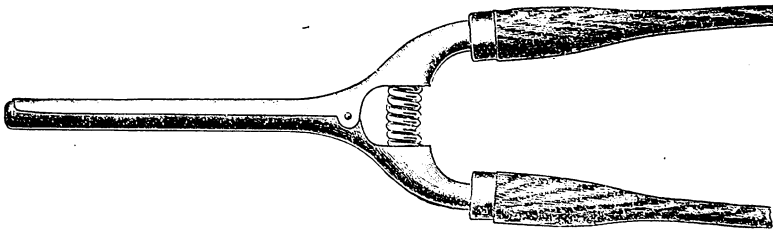
spoke is obtained, as in dumping the barrow the spoke cannot push through or pull out. These wheels are warranted by the makers to give satisfaction and are placed on all barrows when steel wheels are ordered.

Aluminum Hair Curlers.

Gibbs Mfg. Company, Canton, Ohio, are introducing curling irons of aluminum, as herewith shown. The manufacturers claim for the curling irons that they will not rust or tarnish by use, that they may be kept bright by

together, rendering a space inside measuring 9 inches in length, 4 inches wide and 4 inches high, the space between the inner and outer boxes being filled with fire proofing, as is shown in Fig. 2. The interior is furnished with two boxes—one for jewelry and the other for documents. The first is made of galvanized iron, lined with fire proofing, while the document case is covered with the same material. The interior is properly lined with soft plush felt.

The outside of the box is handsomely japanned and striped with steel and brass trimmings, nickel plated. The entire box weighs 11½ pounds, and



Aluminum Hair Curlers.

simply wiping after using, that they heat in half the time that iron or steel curlers will, that they retain the heat longer, and that they are only one-third as heavy. The curlers are made in three sizes—Nos. 3, 4 and 5.

Steel Fire Proof Security Box.

The Sidway Mfg. Company, 32-40 South Jefferson street, Chicago, are placing on the market the steel fire

is designed for those who desire a keep-safe for valuable papers in the house. We are advised that the box has been subjected to a white heat for a half hour without the contents being affected, not even taking the polish off of brass.

Columbian Sash Lock.

The Columbian Sash & Door Lock Company, Wauseon, Ohio, are putting

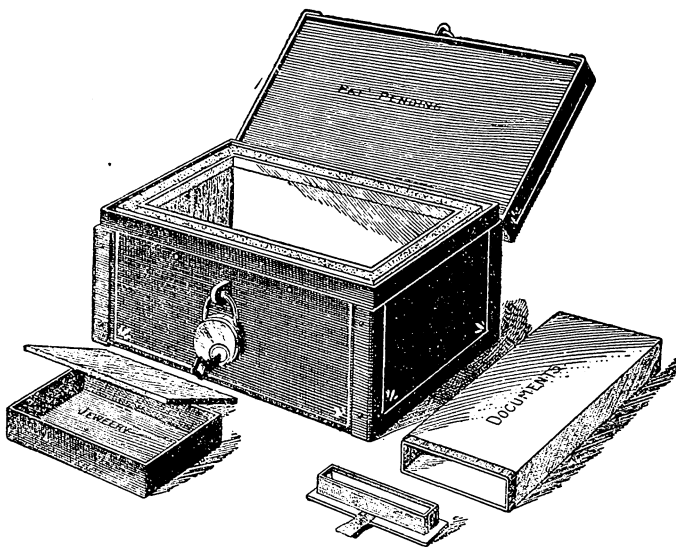


Fig. 1.—Steel Fire Proof Security Box.

proof security box shown in Fig. 1. The box is made of $\frac{1}{8}$ inch cold rolled pickled steel plates in three sizes, the inside one being 11½ inches long by 6½

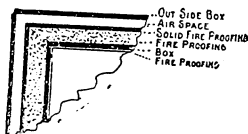


Fig. 2.—Sectional View of the Box.

inch wide and 5½ inches high; while the outside one is 7 inches longer and properly proportioned in other directions. These plates are securely riveted

the sash lock on the market as herewith shown. Fig. 1 represents the lock when fastened on the sash and locked. Fig. 2 shows the lock more in detail and the position of the parts when unlocked. The lever is held when disengaged, as in Fig. 2, by a spring in an upright position, so as to render injury to the lower sash impossible when the sash is carelessly moved up or down. The end of the lever where it engages the keeper fastened to the lower sash is hooked so that when the lever is pressed down the upper and lower sash are drawn together and centered. It is explained by the manufacturers that this action forces the upper sash up and the lower sash down, locking them three ways with one motion of the lever, making

them as tight and secure as in a vise, anti-rattle and burglar proof. The notched piece at the back of the lock is held by a spring in a forward position

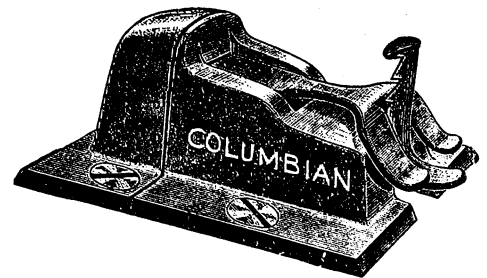


Fig. 1.—Columbian Sash Lock.

to lock the lever when pressed down as in Fig. 1. Upon pressing the notched piece down the lever is released and the window unlocked. The point is made that the lock is very simple in operation and is strong. The cuts also rep-

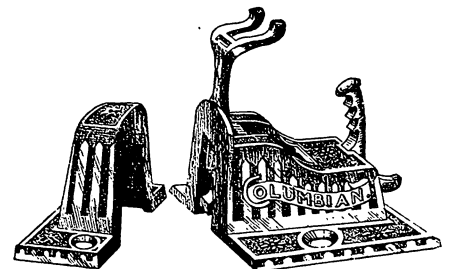


Fig. 2.—Columbian Sash Lock Open.

resent the two styles in which the lock is made, which are furnished in iron bronzed, nickeled, malleable iron in a variety of finishes and in real bronze metal.

Iron Clad Salamander Ware.

Iron Clad Mfg. Company, 22 Cliff street, New York, are putting Sala-



Fig. 1.—Iron Clad Salamander Cook Pot.

mander ware on the market, as illustrated herewith. The body of the ware is

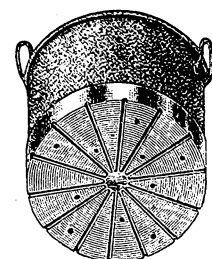


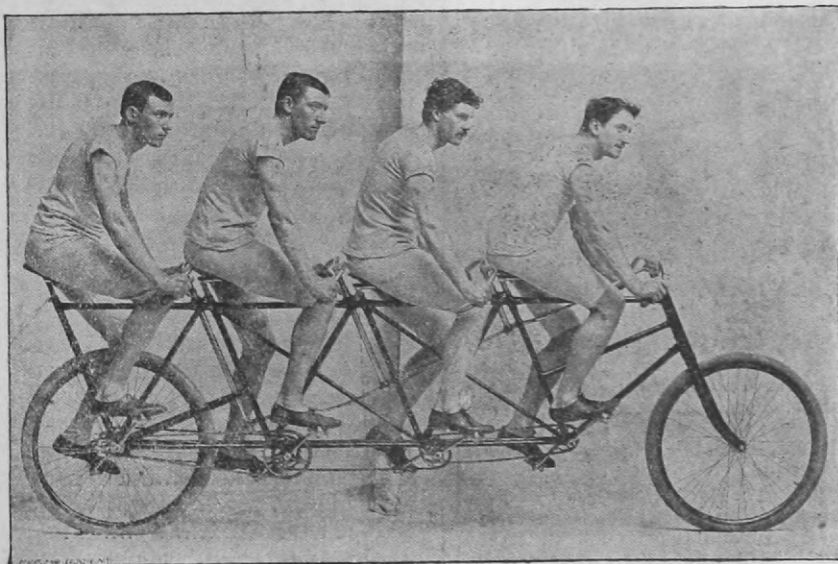
Fig. 2.—Second Bottom of Pure Copper.

made of steel, seamless, and is covered with Iron Clad enamel, as in Fig. 1. In addition to this, each utensil has a

second bottom, as in Fig. 2, seamless, made, it is claimed, of the best quality of copper. The second bottom is perforated and ridged, and is permanently attached to the article, so that an air chamber is formed, to permit a free circulation of air, and to prevent the contents from burning or scorching. The makers claim that this ware can be used in direct contact with the fire without injury to the vessel or contents. In addition to the cooking pot shown in Fig. 1, saucepans and saucepots are made of this ware, all in $\frac{1}{2}$, 1, 2, 3, 4 and 6 quart sizes.

Stearns' Quadruplet Pace Maker.

The cut here shown represents the quadruplet built by E. C. Stearns & Co., Syracuse, N. Y., and which accompanied John S. Johnson on his Stearns wheel as pace maker at Independence, Iowa, in recent races. The quadruplet was mounted by the following riders, reading from the left: John H. Gardner, C. A. Benjamin, John Wilkinson and William Van Wagoner, the racing team of the Syracuse Athletic Association. We are advised that this quadruplet is the second one ever built in this country, and is considerably lighter than the first one. It is geared to 80 inches. The rake of the head is designed to insure accuracy and ease of steering, and the principle upon which the frame is constructed is such as to give the greatest amount of strength consistent with lightness. The tread is very narrow. Wooden rims are used



Stearns' Quadruplet Pace Maker.

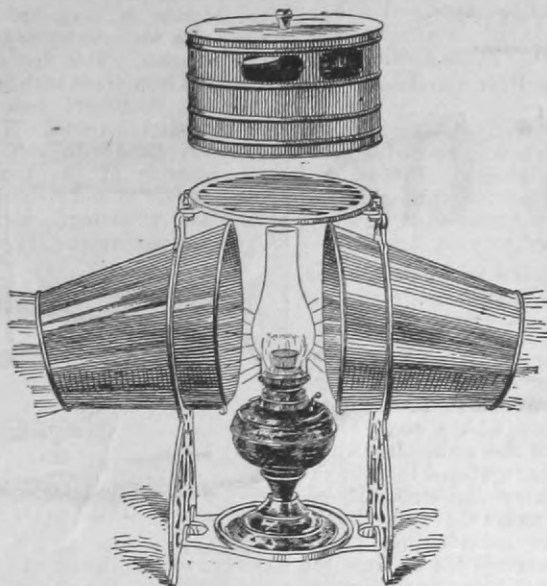
on the wheels, and as the combined weight of the riders amounts to about 750 pounds, the wheel, driven at a high rate of speed in pace making, is referred to as affording an excellent test of the strength of wooden rims.

The Climax Lamp Stove.

Clarence M. Kemp, 101 North Frederick street, Baltimore, Md., has just placed upon the market a lamp stove of novel construction, intended for heating, lighting and cooking purposes. The illustration which we present shows the general arrangement of parts and the method of operation. Simply removing the top or heating drum discloses a large grate, which can be used for boiling, baking, roast-

ing, heating flat irons, &c. The manufacturer states that the frame work is sufficiently strong to sustain a weight of over 100 pounds, and that the device can be set on the floor or on a table, as

be moved, the bolt is raised by the thumb piece at the top of the check and retained again in the casing by a lock. The device is designed to do away with bricks and wooden blocks, and to pre-



The Climax Lamp Stove.

may be most convenient. From an inspection of the cut it will be seen that the position of the lamp is such that it can be instantly removed without disturbing other portions of the stove.

vent the slamming of doors or breaking of glass. The manufacturers claim that the check prevents doors sagging and



The Beardsley Door Check.

Mr. Kemp states that this stove does all that any other lamp or oil stove will do, and in addition warms the feet, as it throws the heat to the floor.

The Beardsley Door Check.

The Beardsley & Monat Mfg. Company, 234 Lake street, Chicago, have recently introduced the Beardsley door check, of which the accompanying illustration presents a front view. The check is screwed to the bottom of the door. Pushing in the button near the top of the check releases the plunger bolt, which is forced downward by a heavy spring, projecting a rubber foot from the casing against the floor, and thus, it is stated, holding the door instantly and firmly. When the door is to

pulling out of hinges, and that it will keep a door either partly or wholly open.

M. A. BRIGGS advise us that he has severed his connection with the Hardware firm of W. H. Briggs & Sons of Valdosta, Ga., and is open to an engagement in any line of Hardware.

Ideal Storm Sash and Window Screen Fastener.

C. H. Congdon, 643 St. Anthony avenue, St. Paul, Minn., is introducing the storm sash and window screen fastener herewith illustrated. The fasteners are made of malleable iron, finished in japan. When putting them

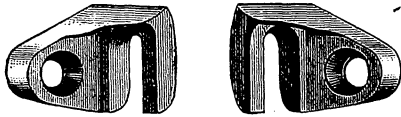


Fig. 1.—Ideal Storm Sash and Window Screen Fastener.

in place the fastener is pivoted to the stop by means of a small 1-inch screw. The open end slot is first turned down into engagement with a screw head upon the face of the sash, after which the screw can be tightened to draw the sash tightly against the stop. By reversing the operation the sash may be removed. The manufacturer claims that as the fastener is put on from the inside, it is easy to operate and obviates the use of a ladder; that it secures the sash tightly, keeping out the cold; that it does not disfigure the building; that the fasteners and screws need not be

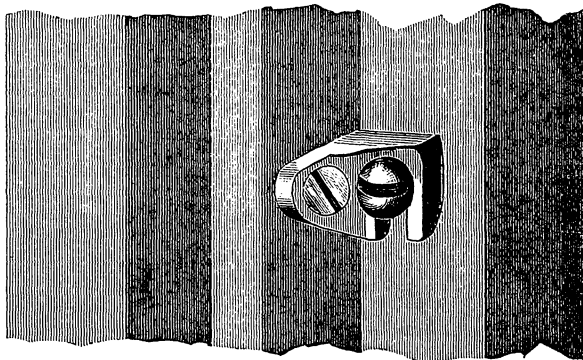


Fig. 2.—Fastener Applied from the Inside.

removed, and that the same fasteners may be used for window screens.

Ætna Curling Iron Heater.

Nicol & Co., 55 West Washington street, Chicago, offer the Ætna curling iron heater, cuts of which are shown herewith. The frame work fits snugly over the neck of the burner, thus bring-

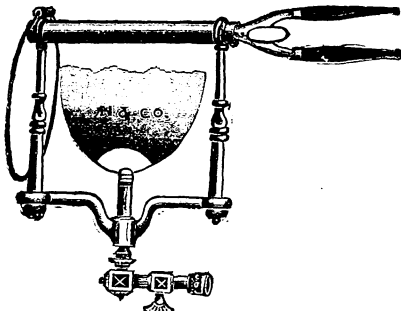


Fig. 1.—Ætna Curling Iron Heater.

ing the nickel plated case, which holds the curling iron proper, directly over the flame, thus obviating blistered or

black fingers, or singed hair. Fig. 2 shows the Ætna with wire attachment for heating liquids. This is referred to

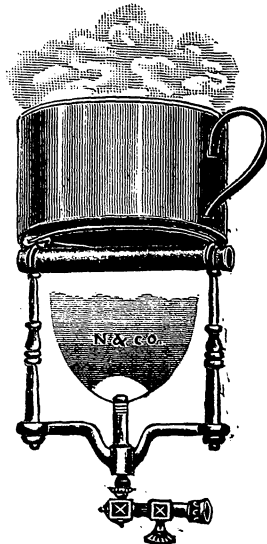


Fig. 2.—Ætna Heater with Wire Attachment.

as a convenient device and as contributing much to the desirability of the heater.

H. A. EARSY & Co., 280 State street, Boston, Mass.: Brushes. A price-list

recently issued of the goods manufactured by the company includes Paint, Varnish, Wall, Kalsomine, Whitewash, Artist, Paper Hangers and Liners', Brushes; Sash Tools, Lettering Pencils, &c. Each of these lines of Brushes is listed in great variety.

BENNETT MFG. COMPANY, 19 Pearl street, Boston, Mass.: The Bennett Sash Fast. A circular price-list illustrates and describes the Fast. It is claimed, among other advantages, that the Fast draws the upper sash up, or pushes the lower down, from a distance of almost 1 inch; that it draws the sashes firmly together; that it cannot be opened from the outside, and that if the sashes cannot be brought into place because of swelling of the wood, or ice, or any other obstacle, top or bottom, the window can still be securely locked. The manufacturers state that they have recently changed the style of the Fast somewhat and also increased the weight, thus improving it in several respects.

CHANDLER PUMP COMPANY, Cedar Rapids, Iowa: Pumps. Their revised illustrated catalogue and price-list shows Lift and Force Pumps, both single and double acting, Iron Pumps for hand and windmill purposes, Cistern and House Force Pumps containing the Haight patent valve, Iron Pipe, Well Casing Brass Goods, Fittings, Tools, &c.

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NOVEMBER 22, 1893.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

White, case 1001, 6 gr. box, small lots, 52

Chalk Lines—See Lines.**Cracks, Door—**

Unity	.....50%
Chisels—	
Socket Framing and Firmer	
P. S. & W.	
New Haven.	
Wetherby	.....75&10@75&10&10%
Mix	
Ohio Tool Co.	.....75@75&5%
Dougllass	.....75@75&5%
Buck Bros	.....30%
L. & I. J. White	.....60&10@60&10&5%
Merrill	.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers30@50&10%
Butchers'	.....\$4.75@5.00 to 2
Spear & Jacksons'	.....\$5 to 4
Buck Bros	.....30%
Cold Chisels, fair quality, # 1	.....14@16%
Chucks—	
Beach Pat.	.....each, \$8.00, 20%
Morse's Adjustable, each	.....\$7.00, 20@20&5%
Danbury	.....each, \$6.00, 30@30&5%
Syracuse, Balz Pat.	.....25%
Graham Patent	.....33&1%
Skinner's Patent Chucks	.....33&1%
Combination Lathe Chucks	.....33&1%
Universal Lathe Chucks	.....40%
Independent Lathe Chucks	.....40%
Drill Chucks	.....15%
Union Mfg. Co.	
Victor	.....\$8.50, 25%
Combination	.....40%
Universal	.....40%
Independent	.....40%

Churns—

Tiffin Union, each, 5 gal.	.....\$3.25; 7 gal., \$3.75; 10 gal., \$4.25.
McDermid Star Barrel Churn, each	.....6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.
Clamps—	
R. I. Tool Co.'s Wrought Iron	.....25%
Adjustable, Cincinnati	.....15&10%
Adjustable, Hammers	.....15&10%
Adjustable, Stearns'	.....30@30&10%
Stearns' Adjustable Cabinet and Cor-	.....30@30&10%
ner	
Cabinet, Sargent's	.....70&10%
Carriage Makers', Sargent's	.....75@75&5%
Carriage Makers', P. S. & W. Co.	.....40&10%
Eberhard Mfg. Co.	.....40&5@40&10%
Warner's	.....40&10@40&10&5%
Saw Clamps, de Vise, Saw Filers'	.....25&10%
Carpenter's, Cincinnati	.....25&10%
Barnes' Machinists' Clamps	.....33&1%

Cleavers, Butchers'

Bradley's	.....25@30%
L. & I. J. White	.....20&5%
Beatty's	.....40@40&5%
New Haven Edge Tool Co.'s	.....40%
P. S. & W.	.....33&5@33&10%
Foster Bros.	.....30%
Schulte, Lohoff & Co.	.....40@40&5%

Clips—

Norway, Axle, 1/4 & 5-16	.....55&5&5%
2d grade Norway Axle, 1/4 & 5-16	.....65&5%
Superior Axle Co. Clips, 5-16	.....60&5&70%
Norway Spring Bar, 5-16	.....60&5&70%
Wrought Iron Felloe Clips	.....# 1, 6%
Steel Felloe Clips	.....# 1, 5%
Baker Axle Clips	.....25%

Cloth and Netting, Wire

See Wire, &c.	
Cockeyes	.....50%
Cocks Brass—	
Hardware list (Globe, Kerosene, Lever	
Bibbs, Racking, &c.)	.....60&2@60&10

Coffee Mills—See Mills, Coffee.

Collars Dog—	
Chapman Mfg. Company, new list	.....40%
Medford Fancy Goods Co.	.....40&10@50%
Embossed, Gift, Pope & Stevens' list	.....30&5%
Leather, Pope & Stevens' list	.....40%
Brass, Pope & Stevens' list	.....40%

Combs, Curry—

Fitch's	.....50&10@50&10&10%
Rubber, per doz.	.....\$10.00, 25%
American Curry Comb Co.	.....33&5@40%
Kohler's Magic Oscillating	.....# doz., \$2.00
Kohler's Humane	.....# doz., \$1.75

Compasses, Dividers &c.

Compasses, Calipers, Dividers, 70&10@70%	
Bemis & Call Co.'s	
Dividers	.....65%
Compasses	.....50&5%
Calipers, Inside or Outside	.....65%
Calipers, Wing	.....60%
Calipers, Double	.....65%
Calipers, Call's Patent Inside	.....55%
Excelsior	.....50%
Stevens & Co.'s	.....25&10%
Starrett's	
Spring Calipers and Dividers	.....25&10%
Lock Calipers and Dividers	.....25%
Combination Dividers	.....25%

Coolers, Water—

S. S. & Co.: 2-gal., \$2.00; 3-gal., \$2.50;	
4-gal., \$2.75; 6-gal., \$3.40 each.	.....33&5%
Coopers' Tools—	
See Tools, Coopers'	
Cord—	
Sash—	
Common	.....# 1, 8&4@9&4
Patent, good quality	.....# 1, 10@11
White Cotton Braided, fair	.....# 1, 23@24
Common Russia Sash	.....# 1, 12&13@13
Patent Russia Sash	.....# 1, 13&14@14
Cable Laid Italian Sash	.....# 1, 10@20
India Cable Laid Sash	.....# 1, 11&12@12
Silver Lake	
A quality, White, 50#	.....25%
A quality, Drab, 55#	.....25%
B quality, White, 30#	.....10%
B quality, Drab, 35#	.....10%
Sylvan Spring, Extra Braided, White, 34#	.....30%
Sylvan Spring, Extra Braided, Drab, 36#	.....30%
Semper Idem, Braided, White, 20#	.....20%
Egyptian, India Hemp, Braided	.....20%
Massachusetts, White	.....25%
Samson—	
Braided, White Cotton	.....# 1, 37%
Braided, Drab Cotton	.....# 1, 42%
Braided, Italian Hemp	.....# 1, 40%
Braided, Linen	.....# 1, 50%
Tate's Solid Braided	
Hercules, White	.....# 1, 25%
Hercules, Drab	.....# 1, 30%
Economy, Drab	.....# 1, 27%
Economy, White	.....# 1, 22%
Ossawa Mills—	
Braided, Giant, White, # 1, 30#	.....20%
Braided, Giant, Drab and Fancy,	.....# 1, 35%
35#	.....10%

Braided, Crown White, # 1, 50#	.....50%
Braided, Crown Drab and Fancy, # 1,	.....55%
55#	.....30%

Wire Picture—

Braided or Twisted	.....80&5@80&15%
Corkscrews—See Screws, Cork.	
Corn Knives and Cutters	
—See Knives, Corn.	
Crackers Nut—	
Table (H. & B. Mfg. Co.)	.....40%
Blake's Pattern, # doz.	.....\$2.00, 10%
Turner & Seymour Mfg. Co.	.....50%
Acme	
Japanned, # gro.	.....\$30, 60%
Nickel Plated, # gro.	.....\$30, 10%

Cradles—

Grain	.....50&2@50&5&2%
Crays—	
White Crays, # gross	.....7@8%
D. M. Stewart Mfg. Co.	
Metal Workers', # gross	.....\$1.75, 25%
Rolling Mill, # gross	.....2.50, 25%
Railroad, # gross	.....2.00, 25%
Soapstone Pencils, # gross	.....1.00, 25%
See also Chalk.	

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

See Combs, Curry.	
Curtain Pins—	
See Pins, Curtain.	
Cutters—	
Meat—	
Dixon's, # doz.	.....40@40&5%
Nos.	.....1 2 3 4
Nos.	.....\$14.00 \$17.00 \$18.00 \$20.00
Woodruff's, # doz.	.....40@40&5%
Nos.	.....100 150
Hale's, # doz.	.....\$15.00 \$18.00
Nos.	.....11 12 13
American	.....\$27.00 \$33.00 \$45.00

Each	.....\$5 \$7 \$10 \$25 \$50 \$80
Enterprise	.....10 12 22 32 42
Nos.	.....\$3 \$2.50 \$4 \$6 \$15
Little Giant, # doz.	.....40@40&5%
Nos.	.....305 310 312 320 322
Nos.	.....\$55.00 \$45.00 \$44.00 \$72.00 \$68.00
Triumph No. 505, # doz.	.....\$21.00, 25@30%
Miles' Challenge, # doz.	.....45@45&10%
Nos.	.....1 2 3
Home No. 1, # doz.	.....\$22.00 \$30.00 \$40.00
Draw Cut, each:	
Nos.	.....\$50 \$75 \$80 \$225
Beef Shavers (Enterprise)	.....20@25%
Chadborn's Smoked Beef Cutter, # doz.	.....\$66.00

Slaw and Kraut—

Tucker & Dorsey Mfg. Co.:	
Slaw Cutters, 1 Knife, # gross	.....\$21.00
Slaw Cutters, 2 Knife, # gross	.....30.00
Kraut Cutters	.....40%

Tobacco—

Champion	.....20&10@30%
All Iron	.....# doz., \$4.25
Nashua Lock Co.'s, # doz.	.....\$18.00, 60@55%
Wilson's	.....65%
Sargent's	.....# doz., \$24.00, 55&10%
Acme	.....# doz., \$20.00, 40%

Washer—

Smith's Pat.	.....# doz., \$12.00, 20&10&10%
Johnson's	.....# doz., \$11.00, 33&1%
Penny's, # doz.	.....\$14, Jap'd, \$16, 55%
Appleton's	.....# doz., \$16.00, 60&10%
Bonney's	.....# doz., \$30.00, 80&10%
Cincinnati	.....25&10%

Diggers, Post Hole, &c.—

Samson, # doz.	.....\$34.00, 25@25&10%
Fletcher Post Hole Augers, # doz.	.....\$30.00, 30%
Eureka Diggers, # doz.	.....\$12.00@13.00
Vaughan's Post Hole Auger, # doz.	.....\$8.50@9.50
Kohler's Little Giant	.....# doz., \$18.00
Kohler's Hercules	.....# doz., \$14.00
Kohler's Invincible	.....# doz., \$12.00
Kohler's New Champion	.....# doz., \$8.00
Scheider	.....# doz., \$18.00
Cronk's Post Bars, # doz.	.....\$80.00
Gibb's Post Hole Digger	.....# doz., \$15.00
Gibb's National	.....# doz., \$12.00
Gibb's Columbia	.....# doz., \$13.00
Kohler's Imperial	.....# doz., \$7.50
Shimer's Hollow Handle	.....# doz., \$7.50
Gem, Improved, # doz.	.....\$9.00@10.00 net

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.	
Door Springs—	
See Springs, Door.	
Drawers.	
Moley, # doz.	.....\$18@20
Waddell's Improved, # doz.	.....\$15.00

Drawing Knives—

See Knives, Drawing.	
Drills and Drill Stocks—	
Blacksmiths' Set, # each	.....\$1.75
Blacksmiths' Set, # each	.....\$7.50, 20%
Breast, P. S. & W.	.....30&5%
Breast, Wilson's	.....30&5%
Breast, Millers Falls	.....each \$3.00, 25%
Breast, Bartholomew's	.....each \$2.50
Ratchet, Merrill's	.....25&10@40%
Ratchet, Ingersoll's	.....20@20&5%
Ratchet, Parker's	.....20@20&5%
Ratchet, Whitney's	.....20&10%
Ratchet, Weston's	.....20@25%
Ratchet, Moore's Triple Action	.....25@30%
Ratchet, Curtis & Curtis	.....30%
Whitneys Hand Drill, Plain	.....\$11.00
Adjustable	.....\$12.00, 20&10%
Automatic Boring Tools	.....\$1.75@1.85
Chicopee Automatic Drill	.....20&10%
Goodell Automatic Drills	.....40&5%
Twist Drills—	
Cleveland	.....50&10&10%
Diamond, W. & B.	.....50&10&10%
Graham's Pat. Groove Shank	.....50&10&10%
Ossawa Mills	.....50&10&10%
New Process	.....50&10&10%
Standard	.....50&10&10%
Syracuse (Metal Hat)	.....50&10%

Drill Bits or Bit Stock

Drills—See Augers and Bts.	
Drill Chucks—See Chucks.	
Dripping Pans—	
See Pans, Dripping.	
Drivers, Screw—	
Dougllass Mfg. Co.	.....20@20&10%
Disston's	.....50%
Buck Bros.	.....30%
Stanley B. & Co.	
No. 64, Varnished Handles	.....65&10%
No. 86	.....70&10%
Sargent & Co.'s	
No. 1, Forged Blade	.....60&10&10%
Nos. 20, 40 and 60	.....60&10&10%
P. S. & W.	.....70%
Knapp & Cowles	
No. 1	.....60&20@70%
No. 2	.....60&10&10@70&5%
No. 3	.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal	.....50&5%
50&10&5%	
Stearns'	.....25&10&5%
Clark Parsons	.....35%
Champion	.....30@33&1%
Clark's Pat.	.....25&10%
Ellrich's Socket and Ratchet	.....25@25&10%
Allard's Spiral, new list	.....25%
Kolb's Common Sense	.....# doz., \$6.00, 25&10%

Syracuse Screw-Drivers Bits.

Screw Driver Bits	.....30&30&5%
Screw Driver Bits, Par's	.....# doz., 50@75%
Fray's Hol. H. dle Sets	.....No. 3, \$12.00, 45%
Cincinnati	.....25&10%
Brace Screw Drivers	.....25&10%
Buck Bros' Screw Driver Bits	.....27&1&5%
Goodell's Automatic	.....60%
Mayhew's Monarch	.....45&10%
C. T. Williamson Wire Novelty Co.	.....50%

Egg Beaters—See Beaters, Egg**Egg Poachers—**

See Poachers, Egg.	
Electric Bell Sets—	
See Bells, Electric.	
Emery—No. 4 to No. 54 to Flour, CF.	
48 gr.	.....150 gr. F.F.F.
Kegs, # 1	.....42 1/2 5 1/2
1/2 Kegs, # 1	.....42 1/2 5 1/2
1/4 Kegs, # 1	.....42 1/2 5 1/2
10-# cans, 10	.....in case 6 6 1/2 5 1/2
10-# cans, less	.....than 10 10 10 7 1/2

Enameled and Tinned Ware—See Ware, Hollow**Escutcheon Pins—**

See Pins, Escutcheon.	
Escutcheons—	
Door Lock	.....Same dis. as Door Locks.
Brass Thread	.....60@60&10%
Wood	.....25%

Expanded Metal—

List No. 5.	
Lathing	.....10%
Fencing, Painted Sheets	.....20%
Netting, Painted Sheets	.....20%
Door Mats, Galvanized	.....25%
Window Guards, Paneled	.....15%
Tree Guards, Paneled	.....15%

Extractors, Lemon Juice—

See Squeezers, Lemon.	
Fasteners, Blind—	
Mackrell's, # doz.	.....\$1.00, 20@20&10%
Van Sand's Screw Pat.	.....\$15 gr. 60&10%
Van Sand's Old Pat.	.....\$15 gr. 55&10%
Austin & Eddy No. 2008	.....# gr., \$9.00
Security Gravity	.....# gr., \$9.00
Zimmerman's	.....50&10%

Faucets—

Fenn's	.....40%
Fenn's Cork Stops	.....33&1%
Star	.....60%
Frary's Pat. Petroleum	.....60%
B. & L. Co.	
West's Lock, Open and Shut Key	.....50%
Star, Metal Plug, new list	.....40%
Lockport, Metal Plug, reduced list	.....60%
Metallic Key, Leather Lined	.....60&10%

Cork Lined—

Cork Lined70&5@70&10%
Trunk's Red Cedar	.....50%
Burns' Red Cedar	.....50&10%
John Sommers'	
Peerless Best Block Tin Key	.....40%
IXL, 1st quality, Cork Lined	.....50%
Diamond Lock	.....40%
Perfection, Fla. Red Cedar (in boxes)	.....40%
Boss Metallic Key	.....50%
Relax & Cork Lined	.....70%
O. K. Western Pattern Cork Lined	.....60%
No Brand, Red Cedar (in bbls.)	.....50&10%
Western Pattern Metal Key	.....40%
No Brand Metal Key	.....60%
Self Measuring	
Enterprise, # doz.	.....\$36.00, 20%
Lane's, # doz.	.....\$36.00, 25&10%

Felice Plates—

Halters—
 Covert's Rope, Jute.....60&10&10&25
 Covert's Rope, 7-16-in. Jute.....70&25
 Covert's Rope, 3/4-in. Hemp.....40&25
 Covert's Ad. Rope Halters.....40&25
 Covert's Hemp Horse and Cattle Tie.....50&10&25
 Covert's Jute Horse Ties.....70&25
 Covert's Jute Cattle Ties.....70&10&25
 Covert's Ad. Web Halters.....35&25
 Covert's Saddlery Works Halters.....30&25
 Covert's Saddlery Works Horse.....30&25
 Cattle Ties.....80&25
 Covert's Saddlery Works Handy Web Halters.....30&25

Hammers—
Handled Hammers—
 Maydole's, list Dec. 1, '85.....25&10&35
 Buffalo Hammer Co.....40&10
 Humason & Beckley.....50&10
 Atha Tool Co.....40&10
 Verree.....40&10
 C. Hammond & Son.....40&10
 Fayette R. Plumb.....40&10
 Artisan's Choice, A. E. Nail.....40&10
 Regular Y. E. Nail.....50
 Horseshoe Turning Hammers.....50
 Other Hammers.....50&10
 Cheney's Claw.....40&10
 Cheney's Machinists' & Riveting.....50&25
 Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 & 1.75.....30&10
 Nelson Tool Works.....40&10
 Warner & Nobles, list.....25&10
 Peck, Stow & Wilcox.....35&40
 Sargent's.....40&10

Heavy Hammers and Sledges—
 3 lb and under.....\$40
 3 to 5 lb.....75&10&75&10
 Over 5 lb.....85
 Wilkinson's Smiths.....10&11
Handcuffs and Leg Irons—
 See Police Goods.

Handles—
Cross-Cut Saw Handles—
 Atkins', new list.....40
 Champion.....40
 Eli's 'Perfectum'.....\$ doz. \$3.00
 Sensible.....40

Iron, Wrought or Cast—
 No. or Thumb.....1 2 3 4
 Per doz.....\$0.90 1.00 1.08 1.35 1.50
 Roggin's Latches.....\$ doz 30&35
 Bronze Iron Drop Latches.....\$ doz 72 net
 Jap'd Store Door Handles—Nuts, \$1.02, plate, \$1.10, no plate, \$0.88.....10&10
 Barn Door, \$ doz \$1.40.....10&10
 Chest and Lifting.....70&70&10

Wood—
 Saw and Plane.....40&10&50
 Hammer, Hatchet, Axe, &c.....40&40&50
 Bradawl.....\$ gr \$2.00
 Hickory Firmer Chisel, ass'd.....\$ gr \$4.50
 Hickory Firmer Chisel, large.....\$ gr \$5.00
 Apple Firmer Chisel, ass'd.....\$ gr \$5.00
 Apple Firmer Chisel, large.....\$ gr \$5.00
 Socket Framing Chisel, ass'd.....\$ gr \$5.00
 J. B. Smith & Co.'s Pat. File.....50
 File, assorted.....\$ gr \$2.75
 Auger, assorted.....\$ gr \$2.00
 Auger, large.....\$ gr \$7.00
 Pat. Auger, 1st.....\$30&10
 Pat. Auger, 2nd.....\$ set \$1.25
 Pat. Auger, Swan's.....\$ set \$1.00
 Hoe, Rake, Shovel, &c.....60&60&25

Hangers—
 Barn Door, old patterns.....70&70&5
 Barn Door, New England.....70&70&5
 Samson Steel Anti-Friction.....50
 Orleans Steel.....55
 Hamilton Wrought Steel Track.....55
 Champion.....60&10
 Climax Anti-Friction.....55
 Zenith for Wood Track.....55
 Sterling.....\$15.00, No. 2, \$16.50, No. 3, \$18.00.....50&25
 Kidder's.....50&50&10
 Boss.....60&10&60&10&5
 Best Anti-Friction.....60&10&60&10&5
 Duplex (Wood Track).....60&10&5
 Terry's Modern.....50&10&50&10&5
 Terry's Ideal.....50&10&50&10&5
 Terry's Solid.....50&10&60
 Terry's Shield.....50&10&60
 Terry's Wrought Single Strap.....50&10
 Cronk's Patent Steel Covered.....50&10
 Carrier Steel Anti-Friction.....50&10
 Richards.....30&30&10
 Lane's New Standard.....50&50&10
 Lane's Standard.....50&50&10
 Lane's Parlor.....40
 Warner's Pat.....20&10&10
 Stearns' Anti-Friction.....20&10&10
 Stearns' Challenge.....25&10&10
 Cincinnati Nos. 1, \$2.25; 3, \$2.50; 4, \$2.50.....25
 Paragon Nos. 5, 5 1/2, 7 and 8.....20&10
 Crescent.....60&60&10
 Nickel, Steel, Nos. 0, \$25; 1, \$20; 2, \$15.....40&10&50
 Chicago Anti-Friction.....30&10
 Star.....40&10&40&10&5
 Barry.....50
 Interstate.....50&10&60
 Pendulum, Payson's.....40&40&10
 Moody.....45
 Economy, \$6.00.....50&10
 Perfection.....50&10&50&10&5
 Lundy, Steel Parlor.....40
 Matchless.....50&10
 Magic.....45&10
 Wild West.....45&10
 Moore's Elevator.....39&45
 Moore's Baggage Car Door.....39&45
 Moore's Railroad.....55

Harness Snaps—See Snaps.
Hatchets—
 American Axe and Tool Co.....40 & 10
 Blood's.....40 & 10
 Hunt's.....40 & 10
 Mann's.....40 & 10
 Peck's.....40 & 10
 Underhill's.....40 & 10
 Fayette R. Plumb.....40 & 10
 C. Hammond & Son.....40 & 10
 Kelly's.....40 & 10
 Buffalo Hammer Co.....50 & 50
 Sargent's & Co.....10 & 10
 P. S. & W. Co.....10 & 10
 Schulte, Lohoff Co.....10 & 10
 Ten Eyck Edge Tool Co.....10 & 10
 Collins.....10

Hay and Straw Knives

See Knives.

Hinges—

Blind Hinges—
 Parker.....75&10
 Huffer.....50&60&10
 Clark's Nos. 1, 3, 5, 40 and 60.....50
 Clark's Mortise Gravity.....80&50&80&10
 Sargent's Nos. 1, 3, 5 11, 12, 13.....50
 Reading's Gravity.....75&10&75&10&5
 Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2, 3, 8.....75&10&25
 North's Automatic Blind Fittings, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....10

Gate Hinges—

Western.....\$ doz \$4.20, 60&60&10
 N. E.....\$ doz \$7.80, 60&60&10
 N. E. Reversible.....\$ doz \$5.60, 60&60&10
 Clark's, Nos. 1, 2, 3.....60&10&60&10
 N. Y. State.....\$ doz \$4.90, 60&60&10
 Automatic.....\$ doz \$12.50, 50
 Shepard's.....60&10&5

Spring Hinges—

Geer's Spring and Blank Butts.....40
 Union Spring Hinge Co's list.....40
 Barker's Double Acting.....25
 Union Mfg. Co.....25
 Bommer's Japanned.....35
 Bommer's All other Kinds.....30
 Buckman's.....15&20
 Chicago.....30
 Bardsley's Patent Checking.....15
 U. S.....25&10
 Empire and Crown.....20
 Hero and Monarch.....55
 American, Gem and Star.....20
 Oxford.....20
 Royal.....60
 Reliance.....60
 Champion.....60
 No. 10 Matchless.....60
 No. 25 Unbreakable.....60
 J. G. C. Covered, \$ gro, \$30.....60&5
 Samson.....60&60&75
 Wiles', No. 1, \$ gro, \$16; No. 2, \$13
 Rexore, No. 1.....\$ gro, \$13.00
 Freeport.....\$ gro, \$12.00
 New Idea Nos. 1 and 10.....\$ gross \$13.00
 New Idea Dbl. Acting.....45
 Ideal No. 1.....\$ gross \$10.00
 Stearns' Noiseless Floor Hinge, \$ set, \$5.00.....20&10&30

Wrought Iron Hinges—

List February 14, 1891.
 Strap and T.....50&10&50&10&10
 Corrugated Strap and T.....60&10&5
 Screw Hook and 14 to 20 in.....\$34
 Strap.....22 to 38 in.....\$34
 Screw Hook and Eye.....\$ in.....\$34
 Rolled Blind Hinges, Nos. 32 and 34.....50&10
 Rolled Blind Hinges, Nos. 252 and 254.....55&10
 Rolled Plate.....70&10
 Rolled Raised.....70&10
 Plate Hinges 8, 10 & 12 in.....\$5
 "Providence" over 12 in.....\$4

Hoes—

Eye—
 D. & H. Scovill.....20
 Lane's Crescent, Planters' Pattern.....45&5
 Lane's Razor Blade, Scovill Pattern.....30
 Maynard, S. & O. Pat.....45&5
 Samsbury Tool Co., S. & O. Pat.....60&5
 Am. Axe and Tool Co., S. & O. Pat.....60&5
 Chattanooga Tool Co., S. & O. Pat.....60&5
 Grub.....60&10

Handled—

Garden, Mortar, &c.....70&70&5&25
 Planter's, Cotton, &c.....70&70&5&25
 Warren Hoe.....60&60&5
 Magic.....\$ doz \$4.00

Hog Rings and Ringers—

See Rings and Ringers.

Holisting Apparatus—

See Machines, Holisting.

Hollow-Ware—

See Ware, Hollow.

Holders—

Bag—
 Sprengle's Pat.....\$ doz \$18.....60

Bit—

Extension.....\$ doz \$15.00.....40&40&10
 Barber's, \$ doz \$20.00.....40&40&10
 Diagonal.....\$ doz \$24.00.....40
 Angular.....\$ doz \$24.00, 40&55

File and Tool—

Bals Pat.....\$ doz \$4.00, 25
 Nicholson File Holders.....20

Sash—

Motley's Adj. Sash, Medium Size.....\$ doz \$1.20, 40

Hooks—

Cast Iron—

Bird Cage, Sargent's List.....60&10&10
 Bird Cage, Reading.....60&10&10
 Clothes Line, Sargent's List.....70
 Clothes Line, Moore's.....70
 Clothes Line, Reading List.....60&10&60&10&10
 Ceiling, Sargent's List.....55&10&10
 Harness, Reading list.....55&10&60&10&10
 Coat and Hat, Sargent's List.....55&10&60&10

Coat and Hat, Reading.....60&10&50&10&10
 Coat and Hat, Moore's.....70

Wrought Iron—

Cotton.....\$ doz \$1.25
 Cotton Pat. (N. Y. Mallet and Handle) Wks.....50
 Tassel and Picture, T. & S. Mfg. Co.....30
 Wrought Staples Hooks, &c.....50
 See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1888.....60&60&10
 Wire Coat and Hat, Miles, list April, 1888.....50&50&10
 Indestructible Coat and Hat.....45&45&5
 Wire Coat and Hat, Standard.....60&60&10
 Handy Hat and Coat.....50&10&60
 Steady Ceiling Hooks.....50&10&60
 Atlas, Coat and Hat.....80&15&80&20
 Williamson's Bird Cage Hooks, list April, 1892.....40
 Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25
 Nolin's Grass.....\$ doz \$2.25
 Bush.....55&60
 Whitmetre—Patent.....55
 Hooks and Eyes—Malleable Iron.....70&70&10
 Hooks and Eyes—Brass.....60&10&10
 Fish Hooks, American.....50
 Bench Hooks—See Bench Stops.

Horse Nails—See Nails, Horse

Horse Shoes—

See Shoes, Horse.

Hose, Rubber—

Competition, Fair quality.....75&75&10
 Competition, Low Grade.....80&80&10
 Standard.....70&10&70&10&5
 Extra.....60&10&60&10&10
 N. Y. B. & P. Co., Para.....25&5
 N. Y. B. & P. Co., Extra.....40&50
 N. Y. B. & P. Co., Dundee.....60&60&5
 Cotton Garden, \$ in, coupled:
 Fair Quality, \$ m.....70
 Good Quality, \$ m.....80

Huskers—

Blair's Adjustable.....\$ gr \$3.00
 Blair's Adjustable Clipper.....\$ gr 7.00
 Hubbard's Solid Steel.....\$ gr 4.50

Indurated Fiber Ware—

See Ware, Indurated Fiber.

Irons.

Sad—
 From 4 to 10, at factory.....\$ 100 m
 Self-Heating.....\$2.30, \$2.40
 Self-Heating Tallow.....\$ doz \$8.00
 Mrs. Potts' Sad Irons, per set.....\$18.00
 No. 50.....55
 No. 55.....60
 No. 60.....65
 Small lots......90 85 1.05 95
 Crown Improved.....60&10
 Ideal Irons, new list.....50&10&50&10&10
 Salamander Irons.....25
 B. B. Sad Irons.....\$30&34
 Chinese Laundry (N.E. Butt Co.).....15
 New England.....50, 20&20&5
 Mahony's Troy Pol. Irons.....25
 Sensible, list Jan. 91.....60&10&5
 Sensible Tailor's Irons.....33&4
 National Self-Heating.....30

Soldering—

Soldering Coppers.....\$ m 10&21
 Covert's Adjustable, list Jan. 1, 1886.....\$5&2
 Tinker's Dread.....\$ doz \$1.75; \$ gro. \$18

Pinking—

Pinking Irons, \$ doz, 65&60.

Jack Screws—See Screws.

Jacks, Wagon—

Daisy.....33&4
 Victor.....33&4
 Lockport.....40

Kettles—

Brass, Spun, Plain, list Jan. 1, '91, 25&5
 Brass, Spun, Plid. W.M. list Jan. 1, '91, 20
 Stamped Brass Kettles.....\$ m 21
 Enameled and Tea—See Ware, Hollow.

Keys—

Lock, Ass'n list Dec. 30, 1886, 65&10&70
 Eagle, Cabinet, &c.....33&4
 Hotchkiss' Brass Blanks.....40
 Hotchkiss' Copper and Tinned.....40
 Hotchkiss' Pad, and Cab.....35
 Wollensak Tinned.....60&10

Knife Sharpeners—

See Sharpeners, Knife.

Knives—

Butcher, Shoe, &c.
 Wilson's Butcher Knives, list Dec. 8, 1890.....25
 Ames' Butcher Knives.....25
 Foster Bros' Butcher, &c.....40
 Jordan's A.A. Butchers', list.....net
 Nichols' Butcher Knives.....40
 W. W. Wilson, Butcher, 8 in, \$2.00; 7 in, \$2.70; 8 in, \$3.80, &c.
 Ames' Shoe Knives.....25&30
 Ames' Bread Knives, \$ doz \$1.50, 15&20
 Moran's Shoe and Bread.....20&20&10
 Hay and Straw—See Hay Knives.
 Table and Pocket—See Cutlery.

Corn—

Bradley's.....10
 Wadsworth's.....25&25&10

Drawing—

Wetherby.....75&75&10&5
 P. S. & W.....75&75&10&5
 Mix.....75&75&10&5
 New Haven.....60&10&60&10&5
 Merrill.....75&75&5
 Douglas.....14&10&25
 L. & J. White.....20&5
 Bradley's.....20&5
 Adjustable Handle.....25&33&4
 Wilkinson's Folding.....25&25&5

Hay and Straw—

Lightning, from jobbers.....\$6.50&\$7.50
 Wadsworth's.....40&70&40&10
 Carter's Needle.....\$ doz \$11.00&\$11.60
 Heath's.....\$ doz \$13.00&\$13.50
 Nolin's Hay.....\$ doz \$7.00&\$8.00

Mincing—

Am. (2d quality), \$ gr, 1 blade, \$7
 2 blades, \$12; 3 blades, \$18.....net
 Lothrop's.....20&10
 Smith's, \$ doz, Single, \$2; Double \$3
 Knapp & Cowles.....50&10&60
 Buffalo Adjustable.....\$ doz \$3.00, 33&4

Knobs—

Door, Mineral.....60&65
 Door, Por. Jap'd.....70&75
 Door, Por. Nickel.....\$2.00&\$2.25
 Door, Por. Plated Nickel.....\$2.00&\$2.25
 Hammer, Door Knobs.....40&10&50
 Yale & Towne Wood, list Dec. 1885.....40
 Base, Rubber Tip.....70&10&5
 Picture, Judd's.....60&10&10
 Picture, Sargent's.....70&10
 Picture, Hemacite.....35&5
 Shutter, Porcelain.....65&10
 Carriage, Jap.....\$ gro 80, 60&10
 Bardsley's Wood Door, Shutter, &c.....15

Ladders.

Davies Extension and Single.....20&5

Ladies—

Melting, Sargents'.....60&60&5
 Melting, Reading.....35&10
 Melting, P. S. & W.....35&10&40
 Melting, Warners'.....30

Lanterns—

Tubular—
 Regular, with Guard.....\$ doz \$3.50
 O. K. with Guard.....\$ doz \$3.75
 Side Lift, with Guard.....\$ doz \$4.00
 Square Lift, with Guard.....\$ doz \$4.25
 Anti-Friction, with Guard.....\$ doz \$4.50
 Brass Plated, Sq. Lift, Guard.....\$ doz \$4.50
 Cop. Plated, Sq. Lift, Guard.....\$ doz \$5.50

Bull's Eye Police—

2 1/2-inch regular.....\$ doz \$3.6
 3-inch regular.....\$ doz \$3.90
 2 1/2-inch flash light.....\$ doz \$4.00
 3-inch flash light.....\$ doz \$4.50

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Humason, Beckley & Co.'s.....70
 Sargents'.....70&10&70&10
 Hotchkiss.....30
 Peck, Stow & W. Co.....60&10

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Wollensak's:
 Class 3 and 4, Bronze Iron.....60
 Class 3 and 4, Bronze Metal.....50
 Class 3 and 4, Brass.....50
 Skylight Lifters.....25
 Reiter's, list Feb. 20, 1891
 Bronzed Iron Rods.....60&60&10
 Brass, Real Bronze or Nickel Plated.....30
 Excelsior.....60&10&2
 Shaw's.....50
 Payson's:
 Universal.....60
 Solid Grip.....60&10&60&10&10
 Imperial.....50&10

Lines—

Cotton and Linen Fish.....50
 Chalk.....60
 Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....25
 Cotton Chalk.....55
 Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50.....10
 Silver Lake, Braided No. 0, \$4.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50.....25
 gro.....25
 Mason's Linen, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4 1/2, \$2.50.....45
 Mason's Colored Cotton.....45
 Wire Clothes, Nos. 18 19 20
 100 ft.....\$3.60 \$3.00 \$2.50
 Ventilator Cord, Samson Braided, White or Drab Cotton.....\$ doz \$7.50, 20
 Ossavan Mills:
 Twisted Chalk.....60
 Braided Chalk.....50
 Solid Braided Ventilator and Mason's Lines.....25
 Cotton Clothes Lines.....\$ 16

Links, Open—

Terry's—per gro:
 Nos.....1 2 3 4
 \$6.00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Par.....list March '84, rev. ker and Corbin.....Jan. 1, '85, 33&4
 Deitz, Nos. 36 to 39.....40
 Deitz, Nos. 51 to 63.....40&10
 Deitz, Nos. 87 to 96.....30
 Champion Night Latches.....40
 Barnes Mfg. Co.....40&40&10
 Eagle and Corbin Trunk.....25
 Champion Cab. and Combin.....33&4
 Yale.....net prices
 Romer's.....25

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar. 20, 1893.....60&10&70
 Much
 Mallory, Wheeler & Co., list July, '88.....lower net prices
 Sargent & Co., list Aug. 1, '88.....often made

Brittain, Graham & Mathes, list Jan. 1890 .60&10&10%
Plate .33&2%
Barnes Mfg. Co. .40&40&10%
Yale .net prices
Deitz Flat Key .30%
Romer's Nickel Latches .15%
Brooklyn Latches .50&10%
Warner's Burglar Proof. # doz. \$8.00, 50%
Elevator—
Moore's .33%&5

Padlocks—

List June 10, 1891. .50&2%
Norwich Lock Mfg. Co., old list. .50&2%
Yale Lock Mfg. Co.'s. .net prices
Eureka, Eagle Lock Co. .40&2%
Romer's No. 0 to 91. .30%
Romer's Scandinavian, &c., Nos. 100 to 505 .15%
A. E. Deitz .40%
Champion Padlocks. .40%
Hotchkiss. .40%
Star .40%
Horsehoe. # doz. \$6.00, 50&10%
Barnes Mfg. Co. .40&40&10%
Nock's .30%
Scandinavian .60&40%
E. T. Fram's Keystone Scandinavian. .40%
1010 line. # doz. \$4.00, 50&10%
120 line. .30&2%
100 line. .60%
510 line. .70&10%
225, 610 and 209 lines. .70%
All other numbers. .50&5%
Ames Sword Co. up to No. 150. .40%
Ames Sword Co. above No. 150. .50%
Slaymaker, Barry & Co. .90&5%
No. 1010 line. .50%
No. 41 line. .60%
No. 61 line. .60%
No. 21 line. .80%

Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 gr. .33%&5
Ferguson's. .33%&5
Victor .60&10&10%
Walker's. .10%
Attwell Mfg. Co. .25&33%
Reading .60&10&10%
Hammond's Window Springs. .40%
Common Sense, Jap'd, Cop'd and Br'd gr \$4.00
Common Sense, Nickel Plated. # gr \$10.00
Universal .30%
Kempshall's Gravity. .60%
Kempshall's Model. .80&60&10%
Corbin's Daisy, list Feb. 15, 1890. .70%
Payson's Perfect. .60&10&10%
Huginin's Sash Balances. .25&5&2%
Huginin's New Sash Locks. .25&5&2%
Ives' Patent. .60&10&5&60&10&10%
Fish (Liesche's pat.), No. 100, # gr. \$8; No. 105, # gr. \$10. .60%
Davis Bronze, Barnes Mfg. Co. .90%
Champion Safety list January, 1893. 70&5%
Security .70%
Giant, list Jan., 1892. .70&5%
Volcott's .60&10&5%
Monarch .50%

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles. # doz. \$1.75; # gross \$17.00

Machines.

Boring—

Without Augers. Upright. Angular. .50%
Douglas. \$5.50 \$6.75 .50%
Snell's, Rice's Pat. .50%
Jennings. 6.50 6.75 .50&5%
Other Machines. 2.25 2.50 .50%
Phillip's Patent with Auger. 7.00 7.50 .25%
Mills Falls. 7.50 .25%
Boss, Carpenters' 3.60
Boss, Ship Builders' 3.85

Fluting—

Knox, 4 1/2-inch Rolls. \$3.25 each } 35%
Knox, 6-inch Rolls. \$3.60 each }
Eagle, 8 1/2-inch Rolls. \$2.15 .35%
Eagle, 6 1/2-inch Rolls. \$2.85 .35%
Crown, 4 1/2 in. \$3.50; 6 in. \$4.00; 8 in. \$6.50 each. .35%
Crown Jewel, 6 in. \$3.50 each, 35%
American, 5 in. \$3.00; 6 in. \$3.40; 7 in. \$4.50 each. .35%
Domestic Fluter. .each, \$1.50
Geneva Hand Fluter, White Metal. # doz \$12.25
Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25. .30%
Shepard Hand Fluter, No. 85, per doz \$15.50. .40%
Shepard Hand Fluter, No. 110, # doz \$11.00 .40%
Shepard Hand Fluter, No. 95, # doz \$3.00 .40%
Combined Fluter and Sad Iron. # doz \$15.00. .30%

Holting—

Moore's Hand Holst, with Lock Brake. 20%
Moore's Anti-Friction Differential Pulley Block. .20%
Moore's Rope Differential Pulley Block. .60%
Energy Mfg. Co.'s. .25%
See also Blocks.

Washing—

Anthony Wayne, # doz. No. 1, #42; No. 2, #36; No. 3, #42. .30%
Wayne American. # doz \$36.00
Western Star # doz. No. 2, #36; No. 3, #39
Weissell. # doz \$54.00
Fair and Square. # doz \$42.00

Mallets—

Hickory .20&10&20&10&10%
Lignumvitae .20&10&20&10&10%
B. & L. Block Co., Hickory & L. V. 30&30&10%
Mattocks—Regular list. 60&10&60&10&5%

Measures

Standard Fibreware, No. 1, peck # dozen, \$3.50; # peck, \$3.00

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

doz \$2.00

Milk Cans—See Cans, Milk.

Mills—

Coffee—
Box and Side, list Jan. 1, 1888. 60&60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893. .20%
The Swift, Lane Bros. .30%
Waddell's New Box Mills, Ideal Brand, New List. .60%

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Best Machines: 10-in. \$4; 12-in. \$4.50; 14-in. \$5; 16-in. \$5.50; 18-in. \$6.
Low-Grade Machines: 10-in. \$3; 12-in. \$3.25 14-in. \$3.50 each

Muzzles—

Safety. # doz. \$3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92. .85&5%
Tack Mfrs' list. .70&5%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 7 8 9 10
Putnam. .23% 21% 20% 18% .15%
American. .9% 9% 9% 9% .9%
Ausable. .28% 26% 25% 24% 23%
Clinton, Fin. .19% 17% 16% 15% 14% .30&5%
Essex. .28% 26% 25% 24% 23%
Lyra. .f. 9% 9% 9% 9% .net
Snowden. .9% 9% 9% 9% 9% .net
Standard. .23% 21% 20% 19% 18% .35%
Vulcan. .23% 21% 20% 19% 18% .25%
Northwest. .25% 23% 22% 21% 20% .25&5%
C. B. K. .25% 23% 22% 21% 21% 4%

A. C. .25% 23% 22% 21% 21% 40&10%
Maud S. .25% 23% 22% 21% 21% 50&10&5%
Champlain. .28% 26% 25% 24% 23% 40&5&2%
Champion. .25% 23% 22% 21% 20% 10&10&10%
Capewell. .19% 18% 17% 16% 16% .10&5%
Anchor. .23% 21% 20% 19% 18% .35%
Western. .23% 21% 20% 19% 18% .50%
Empire Bronzed. .10&14% 50%

Picture—

Brass Head, Sargent's list. .60&60&10%
Brass Head, Combination list. .50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent. .40%
Nail Pullers—See Pullers, Nail.
Nail Sets—See Sets, Nail.
Nut Crackers—
See Crackers, Nut.
Nuts—List Dec. 18, 1889.

Picture—

Square. Hex.
Hot Pressed. .3.80 6.50 off list
Cold Punched. .5.00 5.10 off list
In packages of 100 lb, add 1-10¢ lb, net; in packages less than 100 lb, add 1/4¢ lb, net.

Oakum—

Best or Government. # doz 6% 7% 4%
U. S. Navy. # doz 5% 4% 4%
Navy. # doz 5% 4% 4%

Oil Tanks—See Tanks, Oil.

Oilers—

Zinc and Tin. .85&10&70&5%
Brass and Copper. .50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40 # doz. 10&10&5%
Malleable, Hammers' Old Pattern, same list. .45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass. .50%
Olmstead's Tin and Zinc. .80%
Olmstead's Brass and Copper. .50%
Broughton's Zinc. .60%
Broughton's Brass. .50%
Lee, Draper & Williams. .50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust. .60%

Openers, Can—

Messenger's Comet. # doz \$3.00, 25%
American. # gross \$2.75, 40&10%
Duplex. # doz 25% 15% 20%
Lyman's. # doz \$3.75, 20%
No. 4, French. # doz \$2.25, 55&60%
No. 5, Iron Handle. # gr \$6.00, 45&60%
Eureka. # doz \$2.50, 10%
Sardine Scissors. # doz \$2.75, 30%
Star. # doz \$2.75
Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50. 60&10%
Excelsior, No. 1 \$2.50; No. 2, \$1.50. 40%
World's Best # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00. 60&10%
Universal. # doz \$5.00. 55&5%
Domestic. # doz \$2.00. 45%
Champion. # doz \$2.00. 50%
Moore's. .70%

Packing, Steam—

Rubber—
Standard, fair quality. .70&70&10%
Inferior quality. .75&80%
Extra. .80&80&25%
N. Y. B. & P. Co., Standard. .50%
N. Y. B. & P. Co., Empire. .80%
N. Y. B. & P. Co., Salamander. .25%
Jenkins' Standard. # doz. 25&5&5%

Miscellaneous—

American Packing. .10% 11% 14%
Russia Packing. .13% 14% 14%
Italian Packing. .15% 14% 14%
Cotton Packing. .15% 14% 14%
Jute. .74% 8% 8%

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25
doz. .5%

Galvanized—

Quarts 10 12 14
Hill's Light Weight, # doz. \$2.75 3.00 3.25
Hill's Heavy Weight, # dz. 3.00 3.25 3.75
Sidney Shepard & Co. 2.50 2.75 3.00
Central Stamping Co. 2.50 2.75 3.00
Iron Cads, No. 1, 12, # doz \$4.80
Fire Buckets. 2.75 3.25 3.50
Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt. # doz \$4.20
Milk, 14 qt. # doz \$5.40
Star, 14 qt. # doz \$5.40
Fire Pails, deep. # doz \$4.80
Fire Pails, round bottom. # doz \$5.40

Standard Fiber Ware—

Water Pails, 12 qt. Plain. Deer'd # doz \$3.15 \$3.75
Dairy Pails, 14 qt. # doz. 3.75 4.25
Fire Pails, No. 1, 12, # doz 3.75 4.25
Fire Pails, No. 2, 14 qt. # doz 4.25 5.00
Sugar Pails. 5.50 6.00
Horse Pails. 4.50
Buggy Pails. 3.50
Slop Jars (bal. trap). 7.50 8.50
Chamber Pails, 14 qt. 6.00 7.00

Pans—

Small sizes. # doz 5%
Large sizes. # doz 6%
Silver & Co. (Covered). .40%

Fry—

Standard List: 1 2 3 4
No. 1. \$3.00 \$3.75 \$4.25 7 4.75 \$5.25
No. 2. 5 6
doz. \$6.00 \$7.00 \$8.00 \$9.00
Polished, regular goods. .75&75&10%
Acme Fry Pans. .60&5%

Dust—

Steel Edge, No. 1. # doz \$1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each. .60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886. .50&10&50&10&10%
Sibley's Emery and Crocus Cloth. .30%

Parers—

Apple—

Advance. # doz \$4.75
Baldwin. # doz 5.25
Bouanza. each 5.00
Daisy. 4.00
Dandy. each 7.50
Eclipse. # doz 4.00
Europa, 1888. each 16.00
Family Bay State. # doz 12.00
Favorite. # doz 5.00
Gold Medal. # doz 4.00
Ideal. # doz 4.00
Improved Bay State. # doz 27.00 30.00
Little Star. # doz 4.50
Monarch. # doz 13.50
New Lightning. # doz 5.50
Orion. # doz 4.00
Perfection. # doz 3.00
Pomona. # doz 4.00
Rocking Table. # doz 6.00
Turn Table. # doz 4.50
Victor. # doz 13.50
Waverly. # doz 4.00
White Mountain. # doz 4.00
Reading 78. # doz 7.00

Potato—

White Mountain. # doz \$4.50
Antrim Combination. # doz \$5.50
Hoosier. # doz \$13.50
Saratoga. # doz \$5.50

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers. .50%

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00. .60&10&5&60&10&10&5%

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Bow—

Humason, Beckley & Co.'s. .60&10%
Sargent & Co.'s, \$17 and \$18. .60&10%
Peck, Stow & W. Co. .50&10&50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885. 50&10&50&10&5%
Brass. .60&60&5%

Pipe, Wrought Iron—

List April 13, 1893.

14 and under, Plain. .57%&10%
14 and under, Galv. .50&10%
14 and over, Plain. .67%&10%
14 and over, Galv. .75&10%
Boiler Tubes, list Oct. 24, 1892. .66&10%
Casing, list Nov. 10, 1892. .52%&10%
Inserted Joints Casing, list Nov. 16, 1892. .47%&5%
Steel Boiler Tubes. .27%&5%
Cold Drawn Seamless Steel Tubing. .50%

Planes and Plane Irons—

Wood Planes—

Molding. .40&10%
Bench, First quality. .45&10%
Bench, Second quality. .50&10%
Bailey's (Stanley R. & L. Co.). .60&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.). .50&10%
Miscellaneous Planes (Stanley R. & L. Co.). .25&10%
Stearns' Iron Planes. .50&5&5%
Meriden Mal. Iron Co.'s. .50&5&5%
Davis' Iron Planes. .50&5&5%
Birmingham Plane Co. .60&60&5%
Gage Tool Co.'s Self-Setting. .20&10&10%
Chaplin's Iron Planes. .50&5&5%
Sargent's. .60&60&10%
Standard Tool Co. .50&5&5%

Plane Irons—

Butcher's. # doz. \$5.00, \$5.25 to \$6.00
Buck Bros. .80%

Auburn Thistle. .30&10&30&10&10%
Ohio. .30&10&30&10&10%
Sandusky. .25%
L. & I. White. .25%
Stanley R. & L. Co. .60&10%

Plates—

Felloe. # doz 6% 6% 4%

Pliers and Nippers—

Button's Patent. .60%
Hall's No. 2, 5 in., \$18.50; No. 4, 7 in. \$21.00 # doz. 10%
Humason & Beckley Mfg. Co. 50&50&10%
Lindsay's Giant. .33%
Gas Pliers. .60%
Gas Pliers, Custard's Nickel Plated. 60&5%
Eureka Pliers and Nippers. .40%
Russell's Parallel. .25%
P. S. & W. Cast Steel. .50&50&5%
P. S. & W. Timmers' Cutting Nippers. 40%
Carew's Pat. Wire Cutters. .20%
Morrell's Parallel, # doz. \$12.00. .30&5%
Cronk's 5 in., \$15.00; 10 in. \$20
Cronk's Button Pattern. .50&10&60%
Cronk's Carrier Pliers. .60&60&5%

Plumbs and Levels—

Regular List. .75&10&75&10&10%
Stanley's Duplex. .20&10%
Stanley's Handy. .20&10%
Dietson's. .50%
Cook's. .40&10%
Pocket Levels. .70&10&70&10&10%
Davis Iron Levels. .30%
Davis Inclinometers. .10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, # doz. No. 1, \$6.00; No. 2, \$9.00. .33%
Silver & Co., 6-Ring, # doz. \$4.00, 3-Ring. .32.00

Pokes, Animal—

Bishop's I. L. L. # doz \$8.00
Bishop's M. M. # doz \$4.50
Bishop's Pioneer. # doz \$4.00
Bishop's American. # doz \$3.00
Eagle, Double Stale. # doz \$5.75
Eagle, Single Stale. # doz \$3.75
Buckeye, Single Stale. # doz \$2.75
Bolding. # doz \$6.00
Metallic Horse Poke. # doz \$6.00

Police Goods—

R. I. Tool Co., Handcuffs, \$15.00 # doz 10%
R. I. Tool Co., Leg Irons, \$25.00 # doz 10%
Towers. .25%
Baley's Improved Handcuffs, 2 Hands, Polished, # doz \$48.00; Nickelplated, \$57.00; 3 hands, Polished, # doz \$72.00; Nickelplated, \$84.00. .25%
J. P. Lovell's Police Goods. .25%

Polish—

Metal—

Prestoline. .30%
Prestoline Paste. .33%
Gaston's Silver Compound. .33%&5

Stove—

Joseph Dixon's. # gro. \$6.00, 10%
Gem. # gro. \$4.50, 10%
Gold Medal. # gro. \$9.00, 25%
Lustro. # gro. \$4.75
Lustro. # gro. \$3.75
Rising Sun, 6 gro lots. # gro. \$5.50
Dixon's Plumbago. # doz \$8
Boynton's Noon Day. # gro. \$13.00
Parlor Pride Stove Enamel, # gro. Yates' Liquid, 2 3 5 10 gal # gal. \$0.50 .70 .60 .50
Yates Standard Paste Polish, 10 lb cans. # doz \$12%
Jet Black. # gro \$3.50
Japanese. # gro \$3.50
Fireside. # gro \$2.50
Diamond O. K. Enamel. # gro \$19.00
Bonelli's Liquid Stove Polish. # gro \$9.00
Bonelli's Paste Stove Polish. # gro \$6.00
Black Eagle Benzine Paste, 5 and 10 lb cans. 12%
Black Jack Water Paste, 5 and 10 lb cans. 12%
Nickel Plate Paste. # gro \$6.00
Crown Paste. # gro \$7.20
Crown Paste in 5 and 10 lb pails, # doz \$6.00
Black Flag. # gro \$7.20
Black Flag, 5 and 10 lb pails. # doz \$12
Black Flag, liquid, in bottles, # gro \$8.00
Diamond Rock Nickel Cleaner # gro \$10 20

Pullers Nail—

Scranton..... doz., \$18.00, 38 1/2
 Giant, No. 1..... doz., \$18.00, 10 1/2
 Giant, No. 2..... doz., \$15.00, 10 1/2
 Pelican..... doz., \$9.00, 25 1/2
 Eclipse..... doz., \$24.00, 40 1/2
 Economy..... doz., \$8.00

Pulleys—

Hot House, Sawing, &c..... 60% to 70%
 Japanned Screw..... 60% to 10 1/2
 Brass Screw..... 60% to 10 1/2
 Japanned Side..... 60% to 10 1/2
 Moore's Side, Anti Friction..... 60%
 Moore's Ceiling or End, Anti Friction..... 40%
 Moore's Dumb Waiter, Anti Friction..... 50%
 Moore's Electric Light..... 55%
 Japanned Clothes Line..... 60% to 10 1/2
 Hay Fork, Solid Eye, \$4.00, Swivel..... 50%
 Hay Fork, \$5.00, 60% to 10 1/2
 Hay Fork, "Anti Friction," 5 in. solid..... 50%
 Hay Fork, "F" Common and Patent..... 50%
 Bushed..... 20%
 Hay Fork, Farbox Pat. Iron..... 20%
 Hay Fork, Reed's Self-Lubricating..... 60%
 Hay Fork, Moore's Anti Friction 5 in. Wheel..... 40%
 Shade Rack..... 45%
 Tackle Blocks—See Blocks.
 Shepard's Niagara, No. 25..... doz 23¢ net
 Sash (Auger Mortise)..... 60%
 Common Sense..... 60%
 Empire..... 60%
 Ideal, Nos. 2, 4, 10 & 15..... 60% less 1¢
 Acme..... doz net.
 Star.....
 On bbl. lots extra 5¢.
 Ideal, Nos. 25 and 55..... doz. 22¢ net.

Pumps—

Cistern, Best Makers..... 60% to 10 1/2
 Pitcher Spout, Best Makers..... 87 1/2% to 70%
 Pitcher Spout, Cheaper G'ds..... 75% to 10 1/2

Punches—

Saddler's or Drive, good..... doz., 60¢ to 85¢
 Bemis & Call Co.'s Cast Steel Drive..... 50¢ to 85¢
 Bemis & Call Co.'s Springfield Socket..... 45¢
 Spring, good quality..... doz., \$2.50 to \$3.50
 Spring, Leach's Pat..... 15¢
 Bemis & Call Co.'s Spring..... 50¢ to 85¢
 Bemis & Call Co.'s Check..... 55¢
 Solid Timmers, P. S. & W. Co., doz..... 44¢
 Timmers' Hollow Punches, P. S. & W. Co..... 20¢ to 25¢
 Rice Hand Punches..... 15¢
 Avery's Revolving..... 40¢
 Avery's Sawset and Punch—See Sawsets
 Niagara Hollow Punches..... 20¢ to 25¢
 Niagara Solid Punches..... 55¢

Rail—

Sliding Door, Wrt Brass..... doz., 35¢, 40¢
 Sliding Door, Bronzed Wrt Iron..... ft., 7¢
 Sliding Door, Iron, Painted..... ft., 4¢, 40¢
 Barn Door, Light..... in. 3¢, 4¢
 Per 100 feet..... \$2.00, 2.50, 3.10, 10¢
 B. D. for N. E. Hangers.....

Per 100 feet..... \$3.15, 2.70, 3.25 Net
 Terry's Steel Rail..... ft., 4¢
 Victor Frack Rail, 7 1/2 ft. foot..... 50¢ to 85¢
 Carrier, double braced, Steel Rail..... doz., 40¢ to 44¢
 Lundy Parlor Door, Planed Edge, ft. 7 1/2
 Moore's Steel Rail..... 25¢ to 10 1/2
 Moody Steel Rail ft., 5¢..... 45¢

Rakes—

Cast Steel, Association G'ds..... 70¢ to 75¢ to 85¢
 Cast Steel, outside g'ds..... 70¢ to 75¢ to 85¢
 Mearle..... doz., 40¢ to 45¢
 Gibbs' Lawn Rake..... doz., \$4.50
 Gibbs' Canton Lawn Rake..... doz., \$3.75
 Gibbs' Acme Lawn Rake..... doz., \$4.75
 Gibbs' Favorite Lawn Rake..... doz., \$3.90
 Gibbs' Crown Lawn Rake, No. 1..... doz., \$4.90, No. 2, \$3.50, 40¢
 Oneida Lawn Rake..... doz., \$5.00
 Fort Madison Prize Bow Brace..... 65¢
 Peerless..... 65¢
 Fort Madison Steel Tooth Lawn Rake..... \$6.00, 25¢

Razors—

J. R. Torrey Razor Co..... Net prices
 Wostenholm and Butcher, \$10 to 25..... 10¢
 Jordan's A.A.I., new list..... Net prices
 Jordan's Old Faithful, new list, Net prices
 Galvanic..... doz., \$15.00
 Electric Cutlery Co..... Net prices
 Campbell Cutlery Co..... 50%

Razor Straps—

See Straps, Razor.

Registers—

Moore's Japanned..... 75¢
 Moore's Electroplated..... 75¢
 Moore's Bronze Finishes..... 70¢
 Moore's Solid Bronze..... 65¢
 Moore's Stove Pipe..... 35¢

Rings and Ringers—

Bull Rings—
 Union Nut Co..... 55¢
 Sargent's..... 75¢ to 10 1/2
 Hotchkiss' low list..... 30¢
 Humason, Beckley & Co.'s..... 70¢ to 10 1/2
 Peck, Stow & W. Co.'s, 50¢ to 10 1/2 to 10 1/2
 Ellrich Hd. W. Co., White Metal, low list..... 50¢ to 10 1/2

Hog—

Top of the Hill Ringers..... doz \$2.00
 Top of the Hill Ringers..... doz \$1.25
 Hill's Improved Ringers..... doz \$1.25
 Hill's Old Style Ringers..... doz \$1.15
 Hill's Tongues..... doz \$3.00
 Hill's Rings..... doz bxs \$1.00
 Perfect Rings..... doz bxs \$1.50
 Perfect Rings..... doz \$2.15 to \$2.25
 Blair's Hog Rings..... doz \$1.50
 Blair's Hog Rings..... doz \$1.00 to \$1.00
 Champion Ringers..... doz \$2.00
 Champion Rings, Double..... doz \$2.25
 Brown's Ringers..... doz \$2.00
 Brown's Rings..... doz \$1.15 to \$1.25
 Electric Hog Rings..... doz bxs \$1.50
 Electric Hog Rings..... doz \$2.00
 Major Rings..... doz \$1.25
 Major Ringers..... doz \$2.00

Rivets and Burrs—

Norway Iron, list Nov. 17, '87..... 60¢ to 10 1/2
 Second quality..... 50¢ to 10 1/2
 Copper..... 80¢ to 10 1/2
 Copper Iron, Betina Brand..... 50¢ to 10 1/2

Rivet Sets—See Sets.**Roasting and Baking****Pans—See Pans, Roasting and Baking.****Rods—**

Stair, Brass..... 25¢ to 30¢
 Stair, Black Walnut..... doz 40¢

Rollers—

Barn Door, Sargent's list..... 60¢ to 10 1/2
 A. M. Moore's Anti Friction..... 55¢
 Union Barn Door Roller..... 70¢
 Moore's Barn Door Stay..... 50¢
 Thompson Mfg. Co.'s Lawn Rollers..... 30¢

Rope—The following prices are f.o.b.

New York or factory, and are shaded 1/4¢ on large lots; terms, 1 1/2% for cash.
 Manila, 7-16 in. diam. and larger..... 8¢ to 8 1/2¢
 Manila, 1/4 and 5-16 in. 8¢ to 8 1/2¢
 Manila, Tarred Rope..... 7¢ to 7 1/2¢
 Manila, Hay Rope, Med'm..... 8¢ to 8 1/2¢
 Sisal, 7-16 in. and larger..... 5 1/2¢ to 7 1/2¢
 Sisal, 1/4 and 5-16 in. 5 1/2¢ to 7 1/2¢
 Sisal, Hay Rope..... 5 1/2¢ to 6¢
 Sisal, Tarred Rope..... 5 1/2¢ to 5 1/2¢
 Sisal, Medium Lath Yarn..... 5 1/2¢ to 5 1/2¢
 New Zealand..... 7-16 in. and larger..... 5 1/2¢ to 5 1/2¢
 New Zealand..... 1/4 inch..... 5 1/2¢ to 6¢
 New Zealand..... Hay Rope..... 5 1/2¢ to 6¢
 New Zealand, Tar'd Rope..... 5¢ to 5 1/2¢
 Cotton Rope..... 13¢ to 16¢
 Jute Rope..... 8¢ to 10¢

Wire—

List February, 1892. All kinds..... 45¢

Rules—

Boxwood..... 80¢ to 10 1/2 to 80¢ to 10 1/2 to 10 1/2
 Ivory..... 50¢ to 10 1/2
 Starrett's Steel Rules and Straight Edges..... 25¢ to 10 1/2

Sad Irons—See Irons, Sad.**Sand and Emery Paper****and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—**

Note.—Extra 50% often given.

Disston's Circular..... 45¢ to 45¢ to 55¢
 Disston's Cross Cut, list Jan. 1, '93, 40¢ to 10 1/2
 Disston's Hand..... 25¢
 Woodrough & McParlin..... 25¢ to 10 1/2
 Hand, Panel and Rip..... 25¢ to 10 1/2
 Cross Cuts, list Jan. 1, 1893..... 45¢ to 10 1/2
 Wheel, Madden & Clemons Mfg. Co..... 20¢ to 10 1/2
 Hand, Panel and Rip..... 20¢ to 10 1/2
 Cross Cuts, list Jan. 1, 1893..... 45¢ to 10 1/2
 Atkins' Circular..... 50¢ to 10 1/2
 Atkins' Cross Cuts, new list..... 40¢
 Atkins' Mulay, Mill and Drag..... 50¢ to 10 1/2
 Atkins' One-Man Saw..... 40¢
 Atkins' Wood Saws..... 40¢
 Peace Circular and Mill..... 45¢ to 45¢ to 55¢
 Peace Hand Panel and Rip..... 25¢ to 25¢ to 55¢
 Peace Cross Cuts, list Jan. 1, '93..... 45¢ to 10 1/2
 Richardson's Circular and Mill..... 45¢ to 45¢ to 55¢
 Richardson's X Cuts, list Jan. 1, '93, 45¢ to 10 1/2
 Richardson's Hand, &c..... 25¢ to 25¢ to 55¢
 C. B. Jennings & Co.'s..... 25¢

Hack Saws—

Griffin's, complete..... 40¢ to 10 1/2 to 50¢
 Griffin's Hack Saw Blades..... 40¢ to 10 1/2 to 50¢
 Star Hack Saws and Blades..... 25¢
 Eureka and Crescent..... 25¢

Scroll—

Lester, complete, \$10.00..... 25¢
 Rogers, complete, \$4.00..... 25¢
 Barnes' Builders' and Cab Makers..... \$15.25, 25¢
 Barnes' Scroll Saw Blades..... 35¢

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality..... \$18.00
 Hatch, Tea, No. 181..... doz \$6.50 to \$7.00
 Union Platform, Plain..... \$2.10 to \$2.20
 Union Platform, Striped..... \$2.40 to \$2.60
 Chaitillon's Grocers' Trip Scales..... 50¢
 Chaitillon's Eureka..... 25¢
 Chaitillon's Favorite..... 40¢
 Family Turnbuckle..... 30¢ to 30¢ to 10 1/2
 Rielle Bros' Platform..... 40¢

Scale Beams—

See Beams, Scale.

Scissors, Fluting..... 45¢**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)..... \$6.00, 30¢ to 10 1/2
 Box, 1 Handle..... doz \$2.00
 Box, 2 Handle..... doz \$3.00 to \$4.00
 Dedanoe Box and Ship..... 50¢ to 10 1/2
 Foot..... 50¢ to 10 1/2
 Ship, Common..... doz \$3.50
 Ship, R. I. Tool Co..... 10¢

Screen Window and Door

Frames—See Frames

Screw Drivers—

See Drivers, Screw

Screws—**Bench and Hand—**

Bench, Iron..... 55¢ to 10 1/2 to 10 1/2
 Bench, Wood, Beech..... doz \$2.25
 Bench, Wood, Hickory..... 20¢ to 10 1/2
 Hand, Wood..... 25¢ to 10 1/2 to 10 1/2
 Hand, Grand Rapids, list..... 35¢

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890..... 80¢ to 10 1/2 to 25¢
 Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80¢ to 10 1/2 to 20¢
 Hand Rail, Sargent's..... 70¢ to 10 1/2
 Hand Rail, H. & B. Mfg. Co..... 70¢ to 10 1/2 to 75¢
 Hand Rail, Am. Screw Co..... 75¢

Jack Screws—

Jack Screws, Millers Falls list 50¢ to 10 1/2
 Jack Screws, P. S. & W..... 35¢
 Jack Screws, Sargent..... 70¢
 Jack Screws, Stearns..... 40¢ to 10 1/2

Cork—

Humason & Beckley Mfg. Co. 40¢ to 10 1/2 to 50¢
 Williamson's..... 33 1/2¢ to 33 1/2¢ to 45¢
 Williamson's Forged Worm, Applewood Handle, doz., \$5.00, Rosewood, \$5.50..... 40¢
 Detroit Cork Screw Co..... 33 1/2¢

Machine—

Flat Head Iron..... 65¢
 Round Head Iron..... 60¢

Wood—

List January 1, 1891.
 Flat Head Iron..... 70¢
 Round Head Iron..... 65¢ Extra 10¢
 Flat Head Brass..... 70¢ 10¢ soft
 Round Head Brass..... 65¢ given.
 Flat Eye Broke..... 70¢
 Round Head Broke..... 65¢
 Rogers' Drive Screws..... 82 1/2¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain..... 40¢ to 50¢ to 40¢ to 50¢
 Grass..... 40¢ to 10 1/2 to 50¢

Scythe Snaths—

See Snaths, Scythe.

Sets—

Awl and Tool—
 Aiken's Sets, A. W. and Tools, No. 20, doz \$10.00..... 60¢ to 60¢ to 55¢
 Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9..... 45¢
 Millers Falls A.C.J. Tool Hds., Nos. 1, \$12; 2, \$18..... 25¢
 Henry's Combination Haft..... doz \$6.50
 No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50..... 30¢ to 10 1/2
 Common Brad Sets, No. 42, \$10.50; No. 43, \$12.50..... 70¢ to 10 1/2 to 55¢

Nail—

Square..... gr. \$4.00 to \$4.25
 Round..... gr. \$3.25
 Buck Bros..... 27 1/2¢
 Cannon's Diamond Point..... gr. \$12, 20¢

Rivet—

Regular list..... 70%

Saw—

Stillman's Genuine..... doz \$5.00 to \$7.75, 40¢ to 55¢
 Stillman's Pattern, Hand, doz \$3.25, 40¢ to 55¢
 Cross Cut, \$5.00..... doz \$2.00, 40¢ to 55¢
 Common Lever..... doz \$2.00, 40¢ to 55¢
 Morrill's No. 1, \$15.00..... 40¢ to 20¢
 No. 11, \$16.00..... 40¢ to 20¢
 Nos. 3 and 4, Cross Cut, \$23.00..... 40¢ to 20¢
 No. 6, Mill, \$31.00..... 40¢ to 20¢
 No. 10, \$15.50..... 40¢ to 20¢
 Lead, No. 0, \$3.00; No. 1, \$11.15; 15¢ to 20¢
 Nash's..... 20¢ to 10 1/2 to 40¢
 Hammer, Hotchkiss..... \$5.50, 10¢
 Hammer, Bemis & Call Co.'s new Pat. 45¢
 Bemis & Call Spring Hammer..... 30¢ to 55¢
 Bemis & Call Co.'s Plate..... 20¢
 Bemis & Call Co.'s Cross Cut..... 10¢ to 55¢
 Aiken's Genuine..... \$13.00, 60¢ to 60¢ to 10 1/2
 Aiken's Imitation..... doz \$3.00 to \$3.25
 Hart's Pat. Lever..... 20¢
 Disston's Star..... 25¢
 Leopold..... 40¢ to 10 1/2 to 50¢
 Atkins' Lever..... doz No. 1, \$6.00
 Atkins' Criterion..... doz No. 1, \$6.00
 Aiken's Genuine..... \$13.00, 60¢ to 60¢ to 10 1/2
 Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00..... 40¢ to 10 1/2 to 50¢
 Avery's Saw Set and Punch..... 50¢
 Kohler's Royal..... doz \$7.00
 Kohler's Giant Royal..... doz \$12.00
 Crescent..... doz \$3.00
 Laid's..... doz \$18.00
 Taintor Positive..... doz \$18, 50¢

Sharpeners, Knife—

Applewood Handles..... doz \$6.00, 40¢
 Rosewood or Cocobola..... doz \$9.00, 40¢

Shaves, Spoke—

Iron..... 45¢
 Steel..... 45¢
 Bailey's (Stanley R. & L. Co.)..... 40¢ to 10 1/2
 Stearns..... 30¢ to 10 1/2
 Cincinnati..... 25¢ to 10 1/2
 Goodell's..... 25¢

Shears—

American (Cast) Iron..... 75¢ to 10 1/2 to 75¢ to 10 1/2 to 55¢
 Seymour's Lamp Trimmers..... doz \$3.75
 Seymour's Cast, list 1881..... 40¢ to 10 1/2 to 60¢ to 10 1/2 to 55¢
 Heinisch's, list Dec. 1881..... 60¢ to 10 1/2 to 60¢ to 10 1/2 to 55¢
 Heinisch's Tailor's Shears..... 33 1/2¢
 Cast Steel Trimmers:
 First quality..... 80¢ to 80¢ to 10 1/2
 Second quality..... 80¢ to 10 1/2 to 80¢ to 10 1/2 to 10 1/2
 Acme Cast Shears..... 10¢ to 10 1/2
 Diamond Cast Shears..... 10¢ to 10 1/2
 Clipper..... 10¢ to 10 1/2
 Victor Cast Shears..... 75¢ to 10 1/2 to 75¢ to 10 1/2 to 55¢
 Howe Bros. & Hulbert, Solid Forged Steel..... 40¢
 Hoch Chery Co. Solid Steel Forged..... 60¢
 Davenport Cutlery Co..... 60¢ to 80¢ to 10 1/2
 Claus brand, Japanned..... 70¢
 Claus brand, Nickeled, same list..... 60¢
 Galvanic 3/4 to 9 in., doz \$1.00 1/2 inch Electric Cutlery Co., Jap'd..... Net
 Campbell Cutlery Co., Jap'd..... 75¢
 Nickel Plated..... 65¢

Timmers' Snips—

Wrt. Handles, Steel Blades..... 20¢ to 20¢ to 10 1/2
 Niagara Snips and Shears..... 20¢ to 10 1/2
 Cast Handles, Laid with Steel..... 40¢

Pruning Shears and Hook

Diaston's Combined Pruning Hook and Saw..... doz \$18.00, 20¢ to 10 1/2
 Diaston's Pruning Hook, doz \$12.00, 20¢ to 10 1/2
 E. S. Lee & Co.'s Pruning Tools 50¢ to 10 1/2 to 70¢
 Pruning Shears, Henry's Pat. doz..... \$3.50 to \$4.00
 Henry's Pruning Shears, doz \$4.25, \$4.50
 Wheeler, M. & C. Co., Combination, doz \$12.00
 Dunlap's Saw and Chisel, doz \$3.50, 80¢
 J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25; P. S. & W. Co..... 60¢
 Levin Pruner No. 1, \$15.00 doz..... 40¢ to 33¢
 Levin Pruner No. 2, \$21.00 doz..... 40¢ to 33¢

Timmers' &c.—

Shears and Snips (P. S. & W.)..... 20¢ to 25¢
 Snips, J. Mallinson & Co..... 33 1/2¢

Sheaves—

Sliding Door—
 M. W. Co., list July, 1888..... 50¢ to 10 1/2 to 60¢ to 55¢
 R. & E., list Dec. 18, 1885..... 60¢ to 10 1/2 to 60¢ to 10 1/2
 Corbin's list..... 60¢ to 10 1/2 to 60¢ to 10 1/2
 Patent Roller..... 60¢ to 10 1/2 to 60¢ to 10 1/2
 Patent Roller, Hatfield's..... 75¢
 Russell's Anti Friction, list Dec. 18, 1885..... 60¢ to 10 1/2 to 60¢ to 10 1/2
 Moore's Anti Friction..... 50%

Sliding Shutter—

R. & E., list Dec. 18, 1885..... 60¢ to 10 1/2 to 70¢
 Sargent's list..... 70¢
 Reading list..... 60¢ to 10 1/2 to 60¢ to 10 1/2

Shells—

First quality 4, 8, 10 and 12 gauge..... 25¢ to 10 1/2 to 25¢ to 10 1/2
 First quality Rival, Club and Climax Brands, 14, 16 and 20 gauge (\$7.50 list)..... 20¢ to 10 1/2 to 20¢ to 10 1/2
 Prize..... 33 1/2¢ to 10 1/2 to 33 1/2¢ to 10 1/2
 Star, Club, Rival and Climax Brands..... 33 1/2¢ to 10 1/2 to 33 1/2¢ to 10 1/2
 Smokeless brand, 12, 10, 16 gauge..... 33 1/2¢ to 10 1/2 to 33 1/2¢ to 10 1/2
 Trap brand, 12 and 10 gauge, 33 1/2¢ to 10 1/2 to 33 1/2¢ to 10 1/2
 Seibold's Comb. Shot Shells..... 15¢ to 10 1/2 to 15¢ to 10 1/2
 Brass Shot Shells, list quality..... 60¢ to 25¢
 Brass Shot Shells, Club, Rival, Climax..... 65¢ to 25¢

Shells, Loaded—

Standard List, July 19, 1890..... 40¢ to 10 1/2 to 40¢ to 10 1/2 to 10 1/2 to 55¢
 7¢ cash, 10 days.....

Ship Tools—

L. & J. J. White..... 20¢ to 55¢

Shoes, Horse, Mule, &c.

Horse—
 Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden's Boes and Crescent, at factory..... \$4.00
 Bryden's Frog Pressure, at factory \$5.00

Mule—

Add 1¢ per keg to above prices.

Ox Wrought—

Ton lots..... \$ 9¢

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	65¢
Fitch's (Bristol)	60¢10¢
Hotchkiss	10¢
Andrews	50¢
Sargent's Patent Guarded	70¢10¢10¢
German, new list	40¢10¢
Covert	50¢10¢5¢2¢
Covert, New Patent	50¢10¢5¢2¢
Covert, New R. E.	60¢10¢5¢2¢
Covered Spring	60¢10¢10¢
Covert's Saddlery Works' Triumph	33¢4¢
John Protz Snaps	76¢75¢8¢
Kelley & Woolworth's Steel Harness	50¢10¢60¢

Snaths

Soythe	50¢2¢50¢5¢2¢
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Soldering Irons

See Irons, Soldering.

Spittoons, Cuspidors, &c.**Standard Fiberware**

Cuspidors, 3 1/4-inch, 1/2 doz, No. 5, \$3; No. 5X, \$9.	
Spittoons, Daisy, 3-inch, No. 1, 1; 10 and 11 inch, \$8.	

Spoke Shaves

See Shaves, Spoke

Spoke Trimmers

See Trimmers, Spoke.

Spoons and Forks**Tinned Iron**

Basting, Cen. Stamp, Co.'s list	70¢10¢
Solid table and Tea, Cen. Stamp, Co.'s list	70¢10¢
Buffalo, S. & Co.	33¢4¢2¢

Silver Plated

4 months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers	40¢15¢
Rogers & Hamilton	40¢15¢
C. Rogers & Bros.	40¢15¢
Rogers & Bros.	40¢15¢
Reed & Barton	40¢15¢
Wm. Rogers Mfg. Co.	40¢15¢
Simpson, Hall, Miller & Co.	40¢15¢
Holmes & Edwards Silver Co.	40¢15¢
L. Boardman & Son	50¢12¢4¢

Miscellaneous

Holmes & Edwards Silver Co.	
No. 87 Mexican Silver	50¢10¢5¢
No. 80 Silver Metal	50¢10¢5¢
No. 24 German Silver	50¢10¢5¢
No. 50 Nickel Silver	50¢5¢
No. 49 Nickel Silver	50¢10¢5¢
Wm. Rogers Mfg. Co.	
Rogers' Silver Metal	50¢10¢5¢
185 Rogers' German Silver	60¢8¢
222 Rogers' Nickel Silver	50¢8¢
Rogers & Hamilton:	
Steel Goods	40¢10¢
Cimeter, Flatware	40¢15¢5¢
Cimeter, Steel Goods	40¢10¢
Crown Hamilton, Flatware and Cutlery	30¢
German Silver	50¢10¢5¢
Nickel Silver	50¢5¢50¢10¢5¢ cash
Britannia	60¢8¢5¢
Boardman's Nickel Silver, list July 1, 1891	60¢7¢5¢
Boardman's Britannia Spoons, case lots	60¢5¢ cash

Springs

Torrey's Rod, 30 in.	1/2 doz \$1.20 at 1.2
Warner's No. 1, 1/2 doz \$1.50; No. 2, \$3.40	5¢55¢10¢
Gem (Coll), list April 19, 1886	20¢
Star (Coll), list April 19, 1886	20¢10¢
Victor (Coll)	60¢10¢10¢10¢5¢
Champion (Coll)	60¢10¢10¢10¢
Cowell's, No. 2	\$15.00
Rubber, complete, 1/2 doz \$4.50	55¢10¢
Hercules	50¢50¢10¢
Phoenix	39¢4¢

Carriage, Wagon, &c.

Eliphe, Concord, Platform and Half Scroll	60¢10¢60¢10¢10¢10¢ or net prices
Cliff's Road Springs	25¢

Squares

Steel and Iron	80¢10¢10¢80¢25¢
Nickel-Plated	60¢10¢10¢
Try Square and T Bevels	60¢10¢10¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Miter	80¢10¢
Starrett's Micrometer Calliper Squares	25¢
Avery's Flush Bevel Squares	40¢
Avery's Bevel Protractor	50¢

Squeezers

Blair's	1/2 doz \$2.00
Blair's "Climax"	1/2 doz \$1.25

Lemon

Porcelain Lined, No. 1	1/2 doz \$3.00
Wood, No. 2	1/2 doz \$3.00, 25¢
Wood, Common	1/2 doz \$1.70 at 1.75
Dunlap's Improved	1/2 doz \$3.75, 70¢
Sammis	No. 1, \$5.00; No. 2, \$9; 12, \$18
Jennings' Star	1/2 doz \$2.50
The Boss	1/2 doz \$2.50
Dean's, No. 1, 1/2 doz \$8.50; 2, \$3.35; 3, \$1.90; Queen, \$2.50	
Little Giant	50¢50¢5¢
King	40¢5¢
Hotchkiss Straight Flash	1/2 doz \$12.00
Silver & Co. Glass	1/2 gro. \$9.00

Standard Fiber Ware

See Ware, Standard Fiber.

Staples

Barbed Blind, 1/4 in. and larger	1/2 doz 7¢ at 7¢
Barbed Blind, 1/4 in.	1/2 doz 5¢ at 5¢
Fence Staples, Galvanized	Same price
Fence Staples, Plain	as B'r'd Wire
Grand Crossing Tack Co.'s list	75¢10¢

Stocks and Dies

Blacksmith's	
Waterford Goods	35¢
Butterfield's Goods	35¢
Lightning Screw Plate	25¢30¢
Reece's New Screw Plates	25¢30¢
Reversible Ratchet	30¢
Gardner	25¢
Green River	25¢30¢

Steps Bench

Morrill's, 1/2 doz, No. 1, \$10.00; No. 2, \$11.00	
Hotchkiss	1/2 doz \$5, 10¢10¢10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢10¢5¢	

McGill's, 1/2 doz \$3.	10¢
Cincinnati	25¢10¢
Terrell's Nos. 1 and 2, 1/2 doz, \$3; No. 3, \$3.60	80¢
Millers Falls	25¢
Stearns	20¢10¢

Stones, Grind—See Grindstones.**Scythe Stones**

Pike Mfg. Co., list April, 1892	33¢4¢
Cleveland Scythe Co., list Nov. 1892	33¢4¢

Oil Stones, &c.

Pike Mfg. Co.	
Hindustan No. 1, 1/2 d. 8¢	
Sand Stone	5¢
Turkey Oil Stone, 4 to 8 in.	40¢40¢
Turkey Slips	\$2.00
Lily White Washita	60¢
Rosy Red Washita	60¢
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Lily White Slips	80¢
Rosy Red Slips	80¢
Washita Slips, Extra	90¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 3 to 5 1/2 in.	\$3.30
Arkansas Stone, No. 1 1/2 to 3 in.	\$3.50
Lake Superior	1/2 doz \$1.90
Lake Superior Slips	1/2 d 30¢

Stove Polish

See Polish, Stove.

Stretchers Carpet

Cast Steel, Polished	1/2 doz \$2.2
Cast Iron, Steel Points	1/2 doz 75¢80¢
Socket	1/2 doz \$1.75
Bullard's	25¢25¢10¢

Strops, Razor

Genuine Emerson	60¢60¢5¢
Imitation	1/2 doz \$2.00, 20¢10¢
Torrey's	Net prices
Badger's Belt and Com.	1/2 doz \$2.00
Lamont Combination	1/2 doz \$4.00
Jordan's Pat. Padded, list Nov. 1, '89	50¢
Electric Cutlery Co.	Net prices
Campbell Cutlery Co.	Net prices

Stuffer, Sausage

Miles' Challenge, 1/2 doz \$20	50¢50¢5¢
Perry, 1/2 doz, No. 1, \$15.00; No. 0, \$21.00	50¢50¢10¢
Draw Cut No. 4, each \$30.00	20¢
Enterprise Mfg. Co., list Jan 17, '93	25¢
Silver's	40¢10¢

Sweepers, Carpet and Lawn

Bissell No. 5	1/2 doz \$17.00
Bissell No. 3	1/2 doz \$20.00
Bissell, Grand	1/2 doz \$30.00
Domestic	1/2 doz \$21.00
Domestic, No. 2	1/2 doz \$22.00
Grand Rapids	1/2 doz \$24.00
Crown Jewel, No. 1	\$18.00; No. 2, \$20.00
Magie	1/2 doz \$15.00

Nickel

Japanned	1/2 doz \$27.00
Excelsior	1/2 doz \$22.00
Garland	1/2 doz \$18.00
Parlor Queen	1/2 doz \$24.00
Emuville's Delight	1/2 doz \$15.00
Ladies' Friend	1/2 doz \$16.00
Ladies' Friend No. 2	1/2 doz \$18.00
Advance	1/2 doz \$18.00
Our Leader	1/2 doz \$19.00
Triumph	1/2 doz \$20.00
Supreme	1/2 doz \$22.00
Empire Jap'd, 1/2 doz \$22.00; Nickel, \$24.00	
Gilt Edge	1/2 doz \$24.00
Acme	1/2 doz \$23.00
Imperial	1/2 doz \$23.00
Grand Republic	1/2 doz \$23.00
Jap'd, 1/2 doz \$30.00; Nickel, \$33.00	
Banner	1/2 doz \$22.00; Nickel, \$24.00
The Star	1/2 doz \$21.00
Reliable	1/2 doz \$22.00
Rapid Jap'd, 1/2 doz \$22.00; Nickel, \$24.00	
Our Own	1/2 doz \$27.00
Model	1/2 doz \$27.00
Rapid Sweeper Company, Grand Rapids, Mich., make the following rebates:	
5 dozen in 6 months	1/2 doz \$1.00
10 dozen in 6 months	1/2 doz \$2.00
Except on L.F., when 10 dozen price is \$13.50, and 25 dozen \$18.00.	

Lawn

Thompson Mfg. Co.

Davies Lawn

Swings

Tacks, Brads &c.

List October 19, 1889. Old established straight weights. Short Weight goods sold at lower prices.

Carpet Tacks

American, Blued	60¢4¢
American, Tin'd and Cop'd	70¢
Steel, Bright and Blued	60¢4¢
Steel, Tinned and Coppered	70¢
Swedes Iron, Blued	72¢
Swedes Iron, Tinned	75¢
American Iron Tacks, Domestic	60¢
Swedes Iron Tacks	
S. S., Blued	60¢4¢
S. S., Tinned	70¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Gimp and Lace Tacks	
S. S., Blued	62¢4¢
S. S., Tinned	65¢4¢
Lanc., Blued	55¢
Lanc., Tinned	60¢

Basket and Trimmers' Tacks

S. S.	59¢4¢
Hungarian Nails	55¢
Common and Patent Brads	55¢
Leathered Tacks	10¢
Brush Tacks, S. S.	80¢
Looking Glass Tacks, S. S.	85¢
Picture-Frame Points, S. S.	85¢
Finishing Nails	80¢
Trunk and Clout Nails	
Black	65¢
Tinned or Coppered	67¢4¢
Basket Nails	60¢
Chair Nails	55¢
Oliver Box Nails	55¢
Tin Capped Nails	50¢

Miscellaneous

Double Point

Wire Carpet Nails

Claw Handle Carpet

Bonnie Blue

1/2 doz \$1.50

Bill Nye Brad Box	4 00
Parian Gilt Nails, cartoon	50
Home Tacks, No. 50, 1/2 case (12 cartons), \$36.00; No. 100, 1/2 case (12 cartons), \$72.00.	
Home Nails, No. 200, 1/2 case (12 cartons), \$30.00; No. 400, 1/2 case (12 cartons), \$60.00	
Upholsterers' Nails	50¢10¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list

See also Nails, Wire.

Tanks, Oil

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal., \$11 each

Tapes, Measuring

American

Spring

Chesterman's, Regular list

Thermometers

Tin Case

Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list

Tinners' Shears, &c.

See Shears, Tinners' &c.

Tinware

Stamped, Japanned and Piced, list Jan 20, 1887

Tire Benders, Upsetters, &c.—See Benders and Upsetters**Tobacco Cutters**

See Cutters, Tobacco.

Tools**Coopers**

Bradley's

Barton's

L. & J. White

Danbury Mfg. Co.

Beatty's

Sandusky Tool Co.

Shaves Cincinnati Tool Co.

Lumber

Ring Peavies, "Blue Line"

Steel Socket Peavies

Mall Iron Socket Peavies

Cant Hooks, "Blue Line"

Cant Hooks, Common Finish

Cant Hooks, Mail Socket Clasp, "Blue Line"

Cant Hooks, Mail Socket Clasp, Common Finish

Cant Hooks, Clip Clasp, "Blue Line"

Cant Hooks, Clip Clasp, Common Finish

Hand Spikes

Pike Poles, Pike & Hook

Pike Poles, Pike only

Pike Poles, not ironed

Setting Poles

Swamp Hooks

Saw

Atkins, new list

Transom Lifters

See Lifters, Transom.

Traps—Game

Newhouse

Ouida pattern

Game, Blake's Patent

Mouse and Rat

Mouse Wood, Choker

Mouse, Round Wire

Mouse, Cage, Wire

Mouse, Cage, Wire, Am-alive

Mouse, Bonanza

Rat, Decoy

Ideal

Cyclone

Hotchkiss Metallic Mouse, 5-hole traps

Hotchkiss, 75¢; in full cases, 50¢50¢5¢

Hotchkiss, 10¢; Rat Killer

Hotchkiss New Rat Killer

Schuyler's Rat Killer

Dandy

Waddell's Go Bang

Fly

Harper, Champion or Paragon

Balloon, Globe or Acme

Triers

Butter and Cheese

Trimmers, Spoke

Bonney's

Stearns

Ives, No. 1, \$15.00; No. 2, \$12.00

Douglas

Cincinnati

Trowels

Lothrop's Brick and Plastering

Reed's Brick and Plastering</

Whips									
American Whip Co.	Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Driving	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	15.00	16.50	18.00	20.00	.....	.....	.....	.....
Bull Bone, Half-length Whalebone	11.00	12.00	13.00	15.00	.....	.....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	8.00	8.00	8.50	7.00	7.50	8.00	.....	.....
New Name, Stocked Java, Black and Wine Colors	6.00	.....	.....	.....	.....
Americus, 93 Pen Whip	6.00	.....	.....	.....	.....
Gents' Light Driving No. 111	6.00	.....	.....	.....	.....
Gents' Light Driving No. 106	5.00	.....	.....	.....	.....
Hand-made Stocked Java No. 103	8.75	4.00	.....	.....	.....	.....
A large variety of cheaper grades
Team Whips
Toy Whips
Hardware Assortment, 10/American, 75 Whips for \$50.00

Wire and Wire Goods—
Iron—

Market,	Br. & Ann., Nos. 0 to 18.	Extra 5@10% often given and low net prices often made on large lots.
Cop'd, Nos. 0 to 18.	75@10@75@10@25%	
Galv., Nos. 0 to 18.	70@25@70@10%	
Tin'd, Tin'd list, Nos. 0 to 18.	70@70@10%	

Stone, Br. and Ann'd.	Br. and Ann'd.	Extra 10% often given.
Nos. 16 to 18.	80@25%	
Nos. 19 to 28.	80@25%	
Nos. 27 to 38.	82@25%	
Tinned Broom Wire, 18 to 21.	75@10%	
Galvanized Fence	75@10%	
Brass, list Jan. 18, 1894.	40@25%	
Copper, list Jan. 18, 1894.	40@25%	
Annealed Wire on Spools.	70@10%	
Malin's Annealed & Tin'd on Spools.	60@25%	
Malin's Brass and Cop. on Spools.	60@25%	
Ossawan Mills, Ann'd and Tinned on Spools.	80@10%	

Ossawan Mills, Brass and Copper on Spools.	50@10%
Tate's Spooled, Tin'd & Annealed.	60@25%
Tate's Spooled Cop. and Brass	50%
Cast Steel Wire	50%
Stub's Steel Wire	\$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.	50@70%

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.
Bright Wire Goods—
Standard list, 35@10@35@10@10%
Wire Cloth and Netting—
Painted Screen Cloth 100 ft. \$1.10
Galvanized Wire Netting 75@10@75@10@5%

Wire Barb—
See Trade Report.
Wire Rope—See Rope, Wire.

Wrenches—	
American Adjustable	40%
Baxter's Adjustable "S"	40@10@50%
Baxter's Diagonal	60%
Cox's Genuine	50@50@10%
Cox's "Mechanics"	60@10@25%
Girard Standard	85@10@70%
Lamson & Sessions' Engineers'	80@10%
Lamson & Sessions' Standard	70@10%
P. S. & W. Agricultural	75@10@80%
Girard Agricultural	
Lamson & Sessions' Agric'l.	
W. & B. Diamond	

Bemis & Call's:	
Pat. Combination Bright	40@5%
Pat. Combination Black	40@10%
Merrick's Pattern	45%
Brigg's Pattern	30@10%
Cylinder or Gas Pipe	45@5%
No. 3 Pipe	\$3.00, 50@10%
Aiken's Pocket (Bright)	\$3.00, 40@10%
The Favorite Pocket	\$3.00, 40@10%
Webster's Pat. Combination	25%
Boardman's	30%
Always Ready	25@5%
Alligator	60%
Donohue's Engineer	50@10%
Acme, Bright	50@25%
Acme, Nickle	40@25%
Hercules	70@25%
Walker's	55@3%
Diamond Steel	55@3%
Cincinnati Brace Wrenches	25@10%
Taite Vise Wrench	55@10@3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 1, '93. 2% cash
Colby Wringer Co.'s list, Sept. 1, '91. 2% cash
Lovell Mfg. Co., list July 1, 1892. 2% cash
Peerless Mfg. Co., list Feb. 1, 1892. 2% cash
National Wringer & Mfg. Co., list June 1, 1892. 2% cash

Wrought Goods—
Staples, Hooks, &c., list, March 17, 1892. 85@10@85@15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	41
Linseed, City, boiled	43
Linseed, Western, raw	38
Lard, City, Extra Winter	76
Lard, City Prime	75
Lard, City, Extra No. 1	50
Lard, City, No. 1	45
Lard, Western, prime	75
Cotton-seed, Crude, prime	30
Cotton-seed, Crude, off grades	27
Cotton-seed, Summer Yellow, prime	38
Cotton-seed, Summer Yellow, off grades	34
Sperm, Crude	65
Sperm, Natural Spring	66
Sperm, Bleached Spring	71
Sperm, Natural Winter	71
Sperm, Bleached Winter	70
Whale, Crude	45
Whale, Natural Winter	45
Whale, Bleached Winter	48
Whale, Extra Bleached	50
Sea Elephant, Bleached Winter	45
Menhaden, Crude, Sound	35
Menhaden, Crude, Southern	39
Menhaden, Light Pressed	40
Menhaden, Bleached W'ter	43
Menhaden, Extra Bleached	46
Tallow, City, prime	55
Tallow, Western, prime	50
Cocoonut, Ceylon	54
Cocoonut, Cochln	54
Cod, Domestic	38
Cod, Foreign	42
Red Elaine	44
Red Saponified	44
Bank	38
Straits	39
Olive, Italian, bbls	58
Neatfoot, prime	10
Palm, prime, Lagos	74

Mineral Oils—

Black, 29 gravity, 25 @ 30	7
cold test, per gal	7 1/2
Black, 29 gravity, 15 cold test	7 1/2
Black, 29 gravity, summer	6
Cylinder light, filtered	14

Paints and Colors—

Barytes, Foreign, 6 ton	\$22.00
Barytes, Amer. doated	\$29.00
Barytes, Amer. No. 1	\$18.00
Barytes, Amer. No. 2	\$13.00
Barytes, Amer. No. 3	\$11.00
Blue, Celestial	40
Blue, Chinese	25
Blue, Prussian	8
Blue, Ultramarine	8
Brown, Spanish	1 1/2
Brown, Vandyke, Amer.	3
Brown, Vandyke, English	8
Carmin, No. 40, in bulk	2.75
Carmin, No. 40, in boxes	2.85
Carmin, No. 40, in ounce bottles	3.75
Chalk, in bulk	1.75
Chalk, in bbls, \$100	33
China Clay, English	18.00
Cobalt Oxide, prep'd	9.00
Cobalt Oxide, black	1.90
Cobalt Oxide, black, lots 100 lb.	1.96
Green, Paris, in bulk	10
Green, Paris, 170 @ 175 lb	10 1/2
Green, Paris, small pack	12
Green, Chrome, ordinary	6
Green, Chrom., pure	22
Lead, Eng. B.B. white	8 1/2
Lead, Amn. White, dry or in oil	7
Kegs, lots less than 500 lb.	6 1/2
Kegs, lots 500 lb to 5 tons	6 1/2
Kegs, lots 5 tons to 12 tons	6 1/2
Kegs, lots 12 tons and over	6 1/2
Lead, White, in oil, 25 lb tin	1 1/2
Lead, White, in oil, 12 1/2 lb tin	1 1/2
Lead, White, in oil, 1 to 5 lb as sorted tins, add to keg price	2 1/2
Lead, Red, bbls, and 1/2 bbls	6
Lead, Red, kegs	8 1/2
Litharge, kegs	8 1/2
Litharge, bbls, and 1/2 bbls	6

Other, Rochelle	1.35
Other, French Washed	1 1/2
Other, German Washed	1 1/2
Other, American	1 1/2
Orange Mineral, English	8 1/2
Orange Mineral, French	10
Orange Mineral, German	8 1/2
Orange Mineral, American	8 1/2
Paris White, English Cliff stone	1.00
Paris White, American	65
Red, Indian, English	5 1/2
Red, Indian, American	2
Red, Turkey	9
Red, Tuscan	9
Red, Venetian, American	100 lb. 1.00
Sienna, Italian, Burnt and Powder	4
Sienna, Ital., Burnt Lumps	1 1/2
Sienna, Ital., Raw, Powd.	4 1/2
Sienna, Ital., Raw, Lumps	1 1/2
Sienna, American, Raw	1 1/2
Sienna, American, Burnt and Powdered	1 1/2
Talc, French	1 1/2
Talc, American	1 1/2
Terra Alba, Fr'ch, \$100	85
Terra Alba, English	70
Terra Alba, American No. 1	65
Terra Alba, American No. 2	45
Umber, Turkey, Burnt and Powdered	3 1/2
Umber, Turkey Bnt. Ln.	2 1/2
Umber, Turkey, Raw and Powdered	3 1/2
Umber, Turkey, Bnt. Amer.	1 1/2
Umber, Turkey, R'w Amer.	1 1/2
Yellow, Chrome	10
Vermilion, American Lead	11 1/2
Vermilion, Quicks'g, bulk	53
Vermilion, Quicks'g, bags	54
Vermilion, Quicksilver sm't	62
Vermilion, English Import	85
Vermilion, Imitation, Eng.	8
Vermilion, Trieste	90
Vermilion, Chinese	92 1/2
Whiting Common, \$100	37 1/2
Whiting Gliders	45

Zinc, American, dry	3 1/2
Zinc, French, Red Seal	7 1/2
Zinc, French, Green Seal	7
Zinc, French, V. M. X.	7
Zinc, Antwerp, Red Seal	7 1/2
Zinc, Antwerp, Green Seal	7 1/2
Zinc, German, L. Z. O.	6 1/2
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10 1/2
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over	10
lots of less than 1 ton	10 1/2
lots of less than 1 ton	10 1/2
Discov'rs.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2; 25 bbls. 2 1/2; 50 bbls. 3 1/2. No discount allowed on less than bbl. lots.	

Colors in Oil—	
Black, Drop, Frankfurt	25
Black, Drop, English	12
Black, Drop, Domestic	10
Black, Lampblack, Best	20
Black, Lampblack, Common	7
Black, Ivory	8
Blue, Chinese	35
Blue, Prussian	20
Blue, Ultramarine	12
Brown, Vandyke	7
Green, Chrome	8
Green, Paris	16
Sienna, Raw	7
Sienna, Burnt	7
Umber, Raw	7
Umber, Burnt	7

Putty—
In barrels and 1/2 bbls. 0.13@ .0134
In tubs. 0.13@ .0134
In tin cans. 0.13@ .0234
In bladders. 0.13@ .0234

Spirits Turpentine—
In regular bbls. 30 @ 30 1/2
In machine bbls. 30 @ 30 1/2

Glue—	
Low Grade	8 @ 10
Cabinet	12 @ 14
Medium White	13 @ 15
Extra White	17 @ 20
French	10 @ 22
English	10 @ 15
Irish	12 @ ..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 22, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square...	per lb 1.80 @ 1.90¢
1 to 6 in. x ¾ to 1 in.	
Refined Iron:	
¾ to 2 in. round and square...	per lb 1.80 @ 2.00¢
1 to 4 in. x ¾ to 1 in.	
4½ to 6 in. x ¾ to 1 in.	
1 to 6 in. x ¾ and 5-16...	per lb 2.10 @ 2.20¢
Rods—¾ and 1-16 round and sq.	per lb 2.00 @ 2.10¢
Bands—1 to 6 x 8-16 to No. 12...	per lb 2.20 @ 2.30¢
"Burden Best" Iron, base price...	per lb 3.00¢
Burden's "H. B. & S." Iron,	
base price.....	per lb 2.80¢
"Ulster".....	per lb 3.00¢
Norway Bars.....	3.75 @ 4.00¢
Norway Shapes.....	4.50 @ 5.00¢

Merchant Steel from Store—

Open-Hearth and Bessemer Machinery,	
Toe Calk, Tire and Sleigh Shoe, base	
price in small lots.....	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in	
small lots.....	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20.....	3 @ 3½¢
21 to 24.....	3½ @ 3½¢
25 to 28.....	3½ @ 3½¢
27.....	3½ @ 3½¢
28.....	3½ @ 3½¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16.....	2½¢ @ 2½¢
" " " " 18 to 20.....	2½¢ @ 3¢
" " " " 21 to 24.....	3½ @ 3½¢
" " " " 25 to 28.....	3½ @ 3½¢
" " " " 27 to 28.....	3½ @ 3½¢

Best Bloom Sheets, ½ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70¢ & 5¢
Ordinary Bessemer, ½¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to	
assortment.....	per lb 12¢ @ 13¢
Patent Planished.....	per lb A, 10¢; B, 9¢, 5¢
Craig Polished Sheet Steel.....	per lb 8½¢

Foreign Sheet Steel from Store—

Best Cast.....	per lb 15 ¢
Extra Cast.....	per lb 16 ¢
Swaged, Cast.....	per lb 16 ¢
Best Double Shear.....	per lb 15 ¢
Blister, 1st quality.....	per lb 12 ¢
German Steel, Best.....	per lb 10 ¢
2d quality.....	per lb 9 ¢
3d quality.....	per lb 8 ¢
Sheet Cast Steel, 1st quality.....	per lb 15 ¢
2d quality.....	per lb 14 ¢
3d quality.....	per lb 12½¢
R. Musket's "Special".....	per lb 7½ ¢
" " " " Annealed.....	per lb 7 ¢
" " " " "Titanio".....	per lb 30 ¢
Eicken's Special No. 8.....	per lb 15 ¢
Extra.....	per lb 15 ¢

METALS—

Tin—

Banca, Pigs.....	per lb 22¢ @ 22½¢
Straits, Pigs.....	21½¢ @ 22¢
Straits in Bars.....	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ per lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices,	
according to quality.....	Per box.
Melyn and Calland Grade—IC, 10 x 14.....	@ \$8.50
" " " " "IC, 12 x 12.....	@ 6.75
" " " " "IC, 14 x 20.....	@ 6.50
" " " " "IC, 20 x 28.....	@ 13.00
" " " " "IX, 10 x 14.....	@ 8.50
" " " " "IX, 12 x 12.....	@ 8.75
" " " " "IX, 14 x 20.....	@ 8.50
" " " " "IX, 20 x 28.....	@ 17.00
" " " " "DC, 12½ x 17.....	@ 6.00
" " " " "DX, 12½ x 17.....	@ 8.00
Allaway Grade.....	IC, 10 x 14..... @ 6.00
" " " " "IC, 12 x 12.....	@ 6.25
" " " " "IC, 14 x 20.....	@ 6.00
" " " " "IC, 20 x 28.....	@ 12.00
" " " " "IX, 10 x 14.....	@ 7.50
" " " " "IX, 12 x 12.....	@ 7.75
" " " " "IX, 14 x 20.....	@ 7.50
" " " " "IX, 20 x 28.....	@ 15.00
" " " " "DC, 12½ x 17.....	@ 5.50
" " " " "DX, 12½ x 17.....	@ 7.00
Coke Plates—Bright—	
Steel Coke.—IC, 10 x 14, 14 x 20.....	@ \$5.40
" " " " "IX, 10 x 14.....	@ 8.50
" " " " "IX, 12 x 12.....	@ 8.50
" " " " "IX, 14 x 20.....	@ 12.00
" " " " "IX, 20 x 28.....	@ 11.50
BV Grade—IC, 10 x 14, 14 x 20.....	@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices	
according to quality.....	Per box.
Dean Grade.—IC, 14 x 20.....	@ \$5.65
" " " " "IC, 20 x 28.....	@ 11.00
" " " " "IX, 14 x 20.....	@ 6.40
" " " " "IX, 20 x 28.....	@ 12.80
Abeoarne Grade.—IC, 14 x 20.....	@ 5.55
" " " " "IX, 14 x 20.....	@ 10.75
" " " " "IX, 20 x 28.....	@ 6.40
" " " " "IX, 20 x 28.....	@ 12.80

Tin Boiler Plates—

IXX, 14 x 26.....	112 sheets..... @ \$13.35
IXX, 14 x 28.....	112 sheets..... @ 14.50
IXX, 14 x 31.....	112 sheets..... @ 16.00
American Terne Plates.—Apollo.	
IC, 14 x 20.....	@ \$6.25
IC, 20 x 28.....	@ 12.50
IX, 14 x 20.....	@ 7.25
IX, 20 x 28.....	@ 14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢
per lb. Manufactured (including all articles of
which Copper is a component of chief value),
35¢ ad valorem.

Ingot—

Lake.....	@ 11 ¢
Ansonia grade Arizona.....	@ 10½¢
Ansonia grade Casting.....	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper
Manufacturers of the United States, May
19, 1892. Subject to a discount of 15 ¢ @ 35 ¢,
according to size of order. Stub's gauge
standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound.									
			Over 64 oz.	64 oz.	64 oz.	64 oz.	64 oz.	64 oz.	64 oz.	64 oz.	64 oz.	Less than 8 oz.
30—72	72	72	22	22	22	23	24	25	26	27	28	80
30—96	96	96	22	22	22	23	24	25	26	27	28	80
36—96	96	96	22	22	22	23	24	25	26	27	28	80
48—96	96	96	22	22	22	23	24	25	26	27	28	80
48—96	96	96	22	22	22	23	24	25	26	27	28	80
60—96	96	96	22	22	22	23	24	25	26	27	28	80
60—96	96	96	22	22	22	23	24	25	26	27	28	80
84—96	96	96	22	22	22	23	24	25	26	27	28	80
84—96	96	96	22	22	22	23	24	25	26	27	28	80
Over 84 in. wide			25	27								

Bolt Copper, ¾ inch diameter and over, per lb 22¢
Circles, Segments and Pattern Sheets, 60 in.
diameter and less, ¾¢ per lb advance over prices
of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60
in. diameter, up to 96 in. diameter inclusive,
¾¢ per lb advance over prices of Sheet Copper
required to cut them from.
Circles, Segments and Pattern Sheets, over 96
in. diameter, 5¢ per lb advance over prices of
Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. square foot
and heavier, 14¢ per lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz. per
square foot, 2¢ per lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ per lb
advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

14 ounce to square foot and heavier..... 24¢
12 ounce and up to 14 ounce to square foot..... 27¢
10 ounce and up to 12 ounce..... 29¢
Lighter than 10 ounce..... 32¢
Circles less than 8 inches diameter, 2¢ per lb additional.
Circles over 13 inches diameter are not classed
as Copper Bottoms.
15 ¢ @ 25 ¢ discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... per lb 34¢, 15¢ @ 25¢

Tinning—

Net.
Tinning sheets on one side, 10, 12 and 14 x 48
each..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60
in.), each..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56
in.), each..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52
in.), each..... 12¢
Tinning sheets on one side, other sizes, per
square foot..... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier..... 24¢ per lb
14 oz..... 25¢ per lb
12 oz..... 27¢ per lb

Seamless Brass Tubes—

Standard always Stub's gauge, unless other-

wise ordered.

July 6, 1892.

O. G.	N. G.	%	%	%	%	%	1	1½
8-14	6-12	32	28	25	24	23	22	19
16	13	32	28	26	25	24	23	20
18	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	32
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gliding Tube, ¾¢ per lb additional

Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive..... 35¢

Plain, above 3 inch..... 45¢

Plain, 5-16 inch..... 45¢

Plain, ¾ inch..... 60¢

Plain, 1-16 inch..... 81¢

Plain, 1 inch..... 1.60

Fancy Tubing, Brass, to No. 20, inclusive..... 43¢ per lb

Bronze Tubing, ¾¢ per lb more than Brass.

Discount from list..... 30 ¢ @ %

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	2	10	12	14	16	18	20	22	24
and including	10	12	14	16	18	20	22	24	26

To No. 20 inclusive..... 21 ¢ @ 22 ¢

Nos. 21, 22, 23 and 24..... 22 ¢ @ 23 ¢

Nos. 25 and 26..... 23 ¢ @ 24 ¢

Nos. 27 and 28..... 24 ¢ @ 25 ¢

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	24	28	32	36	40	44	48	52	56
and including	24	28	32	36	40	44	48	52	56

To No. 20, inclusive..... 36 ¢ @ 39 ¢

Nos. 21, 22, 23 and 24..... 37 ¢ @ 40 ¢

Nos. 25 and 26..... 38 ¢ @ 41 ¢

Nos. 27 and 28..... 39 ¢ @ 42 ¢

Discount from List 15 ¢ to 25 ¢.

Brass and Copper Wire—

List January 17, 1894.

Numbered by Stub's gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Cop.
All Nos. to No. 16, inclusive.....	\$0.22	\$0.24	\$0.26	\$0.30
No. 17 and No. 18.....	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter.....	.25	.27	.29	.33

Discount 15 ¢ to 25 ¢.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Cop.
No. 22.....	\$0.26	\$0.28	\$0.30	\$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.57
No. 31.....	.51	.53	.55	.62
No. 32.....	.55	.57	.59	.67
No. 33.....	.59	.61	.63	.73
No. 34.....	.64	.66	.68	.80
No. 35.....	.70	.72	.74	.86
No. 36.....	.76	.78	.80	.94
No. 37.....	1.00	1.02	1.04	1.20
No. 38.....	1.30	1.32	1.34	1.50
No. 39.....	2.00	2.02	2.04	2.25
No. 40.....	2.60	2.62	2.64	2.90

— ½ discount.

Spring Wire, 2¢ per lb advance.

Copper Belt and Hose Rivets and Burrs—

No.	Per lb.	No.	Per lb.
No. 5.....	49¢	No. 11.....	66¢
No. 6.....	49¢	No. 12.....	68¢
No. 7.....	49¢	No. 13.....	68¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

60 ¢ @ 5 ¢ discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.
¾ to 3½ inches inclusive..... 17¢ per lb
Over 3½ to 5 inches inclusive..... 18¢ per lb
Piston Rods

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